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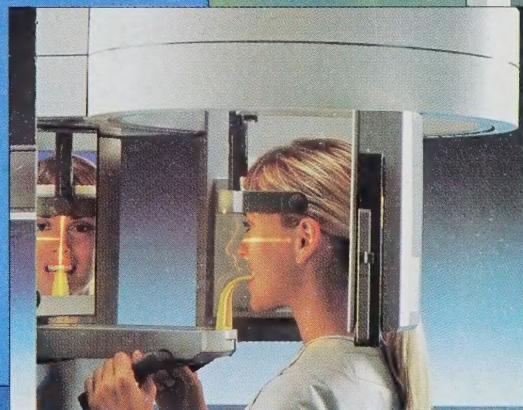
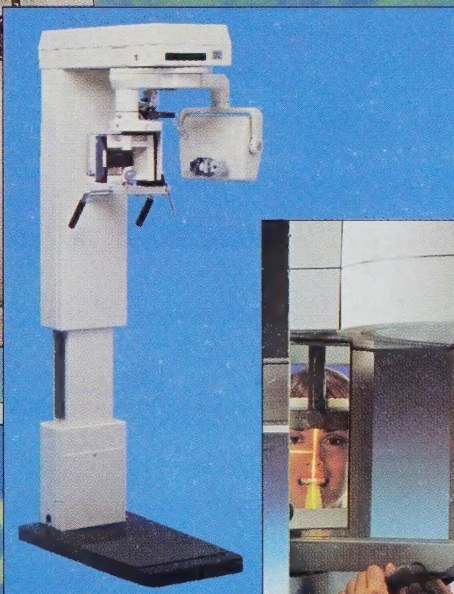
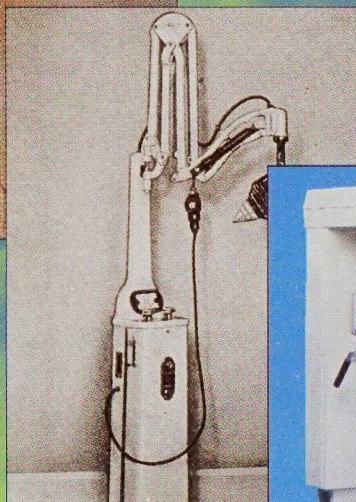
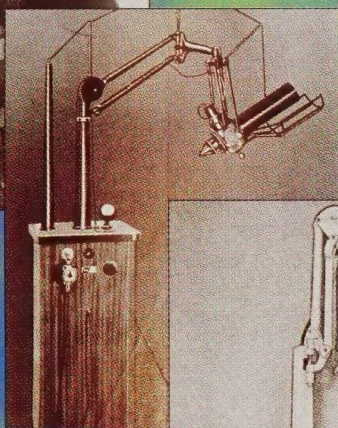
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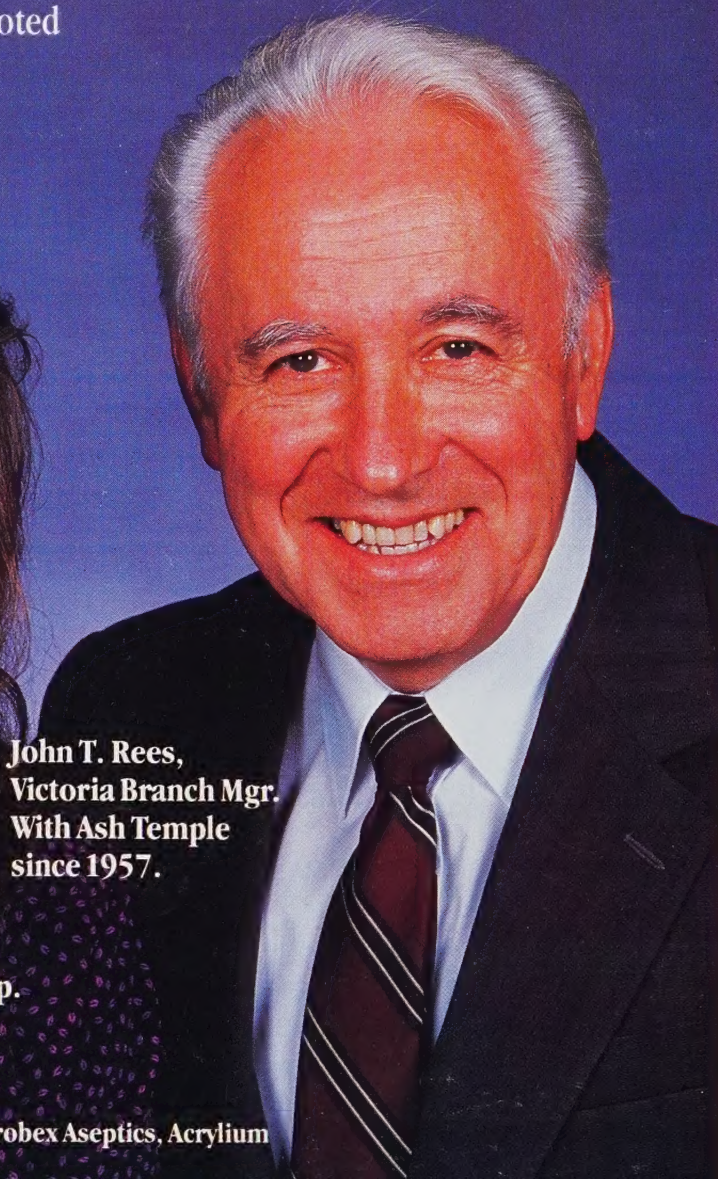
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January 1993

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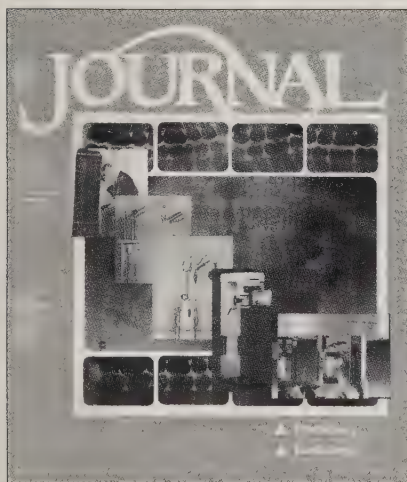
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■ Twin Block Appliances

The *Dental Lab & You* column, "Twin Block Appliances" by Mr. H.J. Maier, in the October 1992 *Journal*, although enlightening, is misleading in some respects. No removable appliance can "offer the full range of treatment options needed for orthodontic correction."

As long ago as 1925, Edward Angle designed his master stroke, the edge-wise fixed appliance. He recognized that a universal orthodontic treatment system must provide the clinician with the ability to tip, rotate, extrude, intrude, upright (move root apices mesiodistally), torque (move root apices faciolingually) and bodily move teeth.

Of these seven distinctly different types of movement, only tipping can be produced by removable appliances. Admittedly, rotation can occasionally be effected on incisors, but the probability of success is unimpressive. Bite depth changes can sometimes be achieved with removable devices, although it should be recognized that such appliances merely pave the way for passive eruption to occur. No removable can actively move a tooth — or teeth — out of the socket towards the occlusal plane. For this reason, vertical dimensions dramatically increased with removables often collapse back equally dramatically.

As to intrusion, up righting, torquing and bodily translation, these movements are, always have been, and always will be impossible with removables. The simple reason is that such appliances cannot grasp a tooth crown sufficiently firmly to produce forces on the root that are above the threshold required to initiate bone remodelling. Failure to recognize these invariable biomechanical facts has led thousands of clinicians to misuse removable appliances by embarking on inherently impossible tasks. The results are at best mediocre and at worst disastrous.

However, blanket condemnation of removable appliances is neither intended nor justified. Certain removable

appliances (for instance the Bionator or its descendant, the Twin Block), can sometimes perform useful orthopedic functions. An example is provoking forward mandibular growth in skeletal Class II cases. The essential requirements for success are:

- a) Correct diagnosis and case selection, i.e., use on patients whose mandibles need to be moved forward horizontally to correct Class II dysplasias. Twin Blocks are not suitable for those cases where the mandible has a good anteroposterior position but the maxilla needs to be retracted. There is no evidence that shows unequivocally that the maxilla can dependably be driven distally by use of removables. As usual, however, removable devices are useful for retracting upper incisors lingually, but these are merely tipping movements, not a repositioning of the maxilla as a whole.
- b) Correct timing. With infrequent exceptions, mid and lower facial growth is largely completed by about 13 years of age. As it is essential to wear a Bionator or Twin Block for a minimum of one year, if the result is to be stable, functional appliance therapy must be commenced not later than age 12. There are some documented cases where success has been achieved with slightly older patients, but these are exceptions to the rule. One should not be gambling on exceptions to the rule to bail oneself out of incorrect treatment planning!
- c) Correct working bite. For Twin Blocks, it is mandatory to take the wax bite: (i) with the incisors in a potentially edge-to-edge position; and (ii) with at least six millimetre separation in the premolar region. If condition (i) is not met, the mandible will not be urged forward sufficiently to provoke the permanent hard tissue changes that are necessary for long-term success. (An exception is the extremely severe Class II case where the patient is unable to protrude the mandible to edge-to-edge. Here, half-protrusive Twin Blocks can be made, and after initial mandibular repositioning, a second set of Twin Blocks can be constructed to an edge-to-edge relationship). Condition (ii) must also be met. If not, the inclined planes that interconnect upper and lower blocks, which oblige the patient to posture

forward, will not interconnect. The patient consciously or unconsciously can then "beat the system" by posturing back, and the Twin Blocks become functionless. It should be noted that this minimum six mm separation in the premolar region must be achieved with the wax bite. The laboratory must not alter the vertical dimension on a plain-line articulator. If this rule is ignored, the inclined planes will not interrelate properly, as the patient's hinge axis is different from the articulator's hinge axis.

- d) Patient cooperation. Obviously, this is of the essence, as 20-plus hour wear is essential, at least initially. Mr. Maier states that "movements of the tongue, lip and mandible are not restricted." Unfortunately, this is not correct. Twin Blocks are bulky devices (although less so than Bionators) and soft tissue movement is significantly affected. Thus, patient compliance and the clinician's skill in motivating the patient are put to the test.
- e) Help from Mother Nature. A few patients lack the genetic potential for the hard tissue growth that is essential for successful horizontal mandibular repositioning. In such cases, only surgery will produce the desired result.

In conclusion, recognition should be given to two other types of removable appliance that have the potential to produce orthopedic movements. One type is the Frankel group of devices, which temporarily alter tongue and facial muscle function. These appliances, in carefully chosen cases, can sometimes produce a modicum of orthopedic arch expansion. Another, simpler, type is the maxillary removable with midline jackscrews. These can sometimes produce a separation of the two halves of the maxilla, if used at a time when the suture is patent.

Removable appliances do have a place in the orthodontic armamentarium. However, the wise clinician will recognize stringent limitations as to their use and will view with healthy scepticism any claims made for "universal" application.

Clement S.C. Lear
Professor Emeritus, Division of Orthodontics, Faculty of Dentistry, University of B.C.

■ Communication

I just received your membership solicitation, which will be quickly processed. At the same time, it sparked me to offer two observations that may be worthy of consideration by CDA.

1. Recently, you sent out the new position with respect to the use of fluorides in dentistry (the recommendations of the Canadian Conference on the Evaluation of Current Recommendations Concerning Fluorides). From the wording in the covering letter, it appears that this information was forwarded to CDA members only. Although I, too, feel that most membership benefits should only be shared with supporting members, there are some issues which transcend this practice, particularly when the public health is involved.

It would be most counterproductive if some dentists follow the new recommendations, while some stay with the old. Similarly, some physicians and pharmacists may have been informed about the new recommendations by their family dentist, but not all. This could cause confusion in the minds of the public (i.e. my dentist says, but my physician/pharmacist says something else).

Locally, our agency sent the recommendations about supplements to all dentists, physicians, nutritionists and pharmacists. In that way, we ensured that all of these individuals will be recommending a similar schedule. The public will benefit quickly from this sensible schedule, and all the professions will be in harmony with these changes.

Perhaps, in the future, when something arises that affects all dentists and the public, CDA might touch base with the Ontario Society of Public Health Dentists. Because of our presence in all Ontario health units, new information could quickly be disseminated.

2. Lately, the Ontario Dental Association (ODA) sent their members a "glossy" prospectus outlining membership benefits, etc. A number of local dentists were concerned about the costs of this publication, and felt that it could have been produced within the ODA using a desktop publishing program. The savings could have been put to more productive use, and it

would have demonstrated a concern about membership costs at a time when many of our members are feeling the economic pinch.

I would encourage CDA to consider similar mailings. Especially if they are accompanied by an explanation outlining that CDA was attempting to reduce membership costs, I believe most dentists would appreciate the effort.

Otherwise, keep up the good work.

*T.W. Hicks, DDS, DDPH
Director Of Dental Services
Simcoe County District Health Unit
Midhurst, Ontario*

■ President's Response

It is true that the information sent to you on fluorides was sent only to members of the Canadian Dental Association. Our mission statement says, "The CDA is the authoritative national voice, resource and focus of unity for the profession of dentistry in Canada, dedicated to meeting member needs..."

Far too often, nonmembers are receiving the benefits made possible through the generous support of paying CDA members such as yourself. At the same time, however, information such as this is important to all health professionals and the public we serve.

In fact, other member dentists have suggested that we share this important material. We have also agreed to distribute it to public health nurses, and the people responsible for fluoride programs in many communities, and will expand this distribution and share the information with other publics, including the nonmember dentists of the association. In this case, however, our advance knowledge that fluorides would be a topic on the *Market Place* program provided us an opportunity to give CDA members the advantage of getting the material earlier than nonmembers, who will, nonetheless, receive the information in the *Journal*.

As you may know, the CDA board of governors approved the fluoride recommendations in principle, and directed that they be used in reviewing the association's current policies on the use of fluorides. Policies relating to fluoride supplements will be reviewed in conjunction with the medical profession, specifically the Canadian Pediatric Society. Official recommendations will be communicated to the Canadian Pharmaceutical Association to allow them to

update the fluoride supplement dosage schedule in the Canadian Pharmaceutical Compendium.

As per your observations on the "glossy" printed matter coming from your professional associations, the Canadian Dental Association has achieved considerable cost savings since the introduction of desktop publishing. The association purchased a system over two years ago and has been able to produce the *Journal*, *Communiqué*, Annual Review, upcoming Members Benefits Booklet and countless other materials at well under half the cost of using external suppliers for design and typesetting.

I will take your comment on our members' concerns about the cost of these in-house publications as a compliment. Your suggestion of letting members know of our efforts in this area is a good one.

*Bernard Dolansky, BA, DDS, MS
CDA President*

■ Annual Review

Just a quick note to say that I thought the Annual Review edition of *Communiqué* was superb. CDA seems to be doing a good job on all fronts and the public relations value of this publication should be a boost to those in Ontario and Quebec who are not (yet) members, assuming they get to read it.

*John Eisner, DDS, PhD
Associate Dean for Academic Affairs
University at Buffalo*

■ Editor's Note

CDA's special Annual Review edition of *Communiqué* has been distributed to every dentist in Canada.

■ Past President's

Lest you think that all the memoranda sent to aging past presidents are tossed into the wastebasket or glanced at with the semi-blind eyes of uninterested retirees of yesteryear, may I express my thanks at being included in your mailing list.

One doesn't go through the CDA experience without having a lasting interest in its well-being and the fine leadership it continues to attract...

*J. Fred Reid, DDS
Brentwood Bay, B.C.*

■ Editor's Note

Dr. Reid was president of CDA in 1974-1975.

HI-TECH/HI-CARE DENTISTRY

Last fall, over 500 dentists from a dozen countries descended on Los Angeles for the International Conference on Computers in Clinical Dentistry. Most, if not all, left the city fascinated by the microchip's potential to influence the delivery of oral health care.

Indeed, the possibilities seem endless. If the conference presenters are right, no area of dentistry will be left untouched by computerization. The microchip's applications in diagnosis and treatment planning, periodontics, endodontics, prosthodontics and CAD/CAM were all addressed at the conference, in detail, as was its future impact on dental college curriculums and classrooms. Even artificial intelligence was discussed (which gave many of us a ray of hope. We need all the intelligence we can get, artificial or otherwise!).

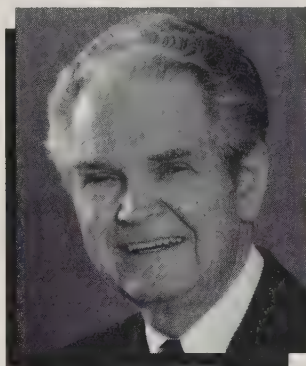
In his introductory remarks, Dr. Jack Preston, the conference chairman, made reference to a never-to-be-forgotten rule. All the technology in the world is worthless if the quality of the patient's care is not the first priority. In other words, hi-tech without hi-care is of no value.

Listening to Dr. Preston, I started to think about the many technological advances that preceded the invention of the microchip. In their time, I'm sure that these dental innovations were as dramatic to the average dental care giver as the computer is to many of us today.

Think of the dental drill. Can you imagine the impact that Wescott had on the dental profession in 1846, when he developed his hand-rotated drill and finger ring-socket combination. Or that the reason he gave for doing so was simply: "My patients will be more comfortable with this instead of digging out decay with a crude excavator."

Remember Morrison, who in 1872 invented the world's first foot-treadle dental engine. Surely he, too, was thinking of patient comfort. Many dentists – and patients – still recall the giant leap forward that dentistry took when the turbine superseded the belt. What went through Dr. Robert Nelson's mind in the early 1950s, when it became apparent that his water turbine drill could spin at the then incredible speed of 60,000 revolutions per minute (rpms)? It was quality care – making dentistry easier and better for his patients.

When S.S. White patented Borden's air rotor in 1957, every dentist and every patient quickly learned



Dr. P. Ralph Crawford

that hi-tech dentistry could easily go hand-in-hand with hi-tech care. Rotating at rpms in the hundreds of thousands, the air rotor revolutionized dentistry. Restorations were completed in less time, with more ease and less pain, which meant better dentistry in more comfort for each and every patient.

Today, the high-speed drill is one of the most important tools in the dentist's armamentarium. Still, like any other technological advance, its value lies in the fact that the patient is better off with it than without it. If

something better than the drill comes along, or if it is found that the patient is worse off with the drill than without it, then the drill will no longer have a place in the dental office.

This message isn't new. Sir William Osler, one of the world's most outstanding medical teachers, expressed it 100 years ago, when he said: "The secret in the care of the patient is caring for the patient."

Osler's words apply as much to the microchip and computer as they did to the instruments found in the dental office in his day. They also apply to the *Journal's* new monthly column on Hi-Tech/Hi-Care Dentistry, which we're launching in this issue.

Originally, we'd planned to explore the impact of computer technology on the practise of dentistry in a single theme-issue of the *Journal*. On further examination, it quickly became clear that there was simply too much material to do justice to the subject using this approach. That led us to create our new monthly column, "Hi-Tech/Hi-Care Dentistry."

In 1993, each issue of the *Journal* will include a column on one of the topics presented at the Los Angeles conference. Dr. Paul Rhodes, a periodontist from Oakland, California, leads off the "Hi-Tech/Hi-Care" series with an overview of the computer's effectiveness. As our series unfolds, we hope that Dr. Rhodes is correct in his assessment of the role of the microchip in the next century: "The days when dentists were slaves to their office computer are gone. Today's systems have reversed these roles, making the computer the servant of the dentist, with the patients being the ultimate beneficiaries."

That's what dentistry is all about.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

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President's Column

TO BE, OR NOT TO BE

My high-school-age son, like generations of students before him, is busy memorizing passages from William Shakespeare's "Hamlet." The other night, as I listened to him reciting the ever-famous "to be or not to be" soliloquy, it occurred to me that a similar question could be put to Canadian dentists: What do we want our dental associations to be?

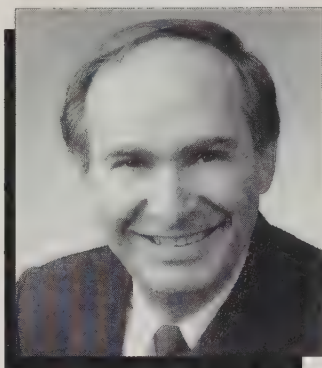
The question isn't as easy to answer as it appears at first glance. For example, do we want our associations to be exclusive "clubs," whose membership is restricted to professional men and women? Do we join associations to take advantage of the discounts and professional perks they offer? Have we banded together to represent the public interest, by promoting optimal health care for all Canadians? Or are we actually a lobby and advocacy group working on behalf of dentists? Many people, myself included, would respond: "All of the above and much more."

In these tough economic times, however, it has become impossible for associations to be all things to all people. Recently, CDA's leadership has devoted an ever-increasing amount of energy to advocacy, at both the government and public level, as well as to providing enhanced membership services. Stating it bluntly, we are spending more of our time looking out for number one – the Canadian dentists who support us through membership.

This brings me back to where we started: "to be or not to be." Should CDA be an association in the broadest sense of the word, or should we become "a national union of dentists"? Most of you will probably answer: "I am a dentist, a professional, and as such I do not join unions."

In Quebec, however, like it or not, every professional must contribute his or her fair share to a "syndicat professionnel," or (roughly translated) professional union. If a Quebec dentist chooses not to join the Quebec Dental Surgeons Association (QDSA), a portion of any monthly payments that he or she is entitled to receive from the province's government-sponsored dental plans is withheld and remitted to QDSA. In effect, the government pays all or a portion of the non-joining dentist's membership fee, which compensates QDSA for the lobbying and public relations initiatives that it undertakes on behalf of the province's dental profession. A similar arrangement now exists between the Ontario Medical Association (OMA) and the Ontario government. Known as a "Rand formula," after Mr. Justice Ivan Rand, this approach is comparable to the dues collection system used by Canada's certified unions.

Currently, CDA's membership income is collected by the provincial corporate members in each province, except Que-



Dr. Bernard Dolansky

bec and Ontario, where individual membership in the association is completely optional. Neither Quebec nor Ontario has implemented a Rand formula involving CDA.

I strongly believe that our future depends on all dentists paying their fair share of the costs of CDA's programs and services, regardless of where they practise. I also feel that professionals should be required, by law, to fund their professional associations at all three levels – local, provincial, and national. The programs and activities offered by these organizations directly influence and increase our ability to be successful dental professionals, and all of us should contribute to their cost.

Nothing causes me to shake my head in frustration more than the phone calls and letters I receive from dentists who threaten to cease membership because of some small difference of opinion or minor point of contention. These dentists seem to forget about the big picture. They never threaten to drop out of CDA because the association provides them with access to a great dental library, or because they receive a top-notch dental journal each month, or because CDA negotiated higher RSP limits on their behalf. No, it's usually because an opinion that they don't agree with was published in the *Journal*, or their special interest group didn't get a fee code, or something equally insignificant.

I can assure you that your representatives on CDA's board of governors, as well as CDA's staff, work extremely hard to deliver the best services possible to each and every member of the association. In many cases, however, these efforts inadvertently benefit nonmembers as well. This is unavoidable, as much of what CDA does impacts on the entire dental profession.

It is my firm belief that everyone who benefits from the programs and services CDA provides should contribute toward the cost of these benefits. If that means adopting a union-like approach, then so be it.

To further explore these ideas, CDA's executive council has approved the creation of a special task force. The new body will develop policies to preserve the status quo in CDA's eight mandatory provinces, but more equitably charge the costs associated with maintaining Canadian dentistry's enviable position to the dentists of Quebec and Ontario. Again, I believe that the future strength and success of the dental profession depends on finding a solution to this problem of "to be or not to be."

*Bernard Dolansky, BA, DDS, MS
President of the Canadian Dental Association*

Announcements

NATIONAL HIGHLIGHTS

March 4-6, 1993
B.C. Dental Meeting
Vancouver, B.C.
Marilynne Webster
(604) 736-3645

April 28 - May 1, 1993
1993 Canadian Dental Association Annual Dental Meeting (Hosted by ODA)
Toronto, Ontario

See blue pages for more details
or call CDA Conventions
1-800-267-6354
(613) 523-1770

May 6-8, 1993
Newfoundland Dental Association Annual Convention
(709) 579-2362

May 16-21, 1993
Les journées dentaires
(514) 875-8511

May 21-22, 1993
New Brunswick Dental Society
(506) 452-8575

May 27-June 1, 1993
Alberta Dental Association Convention
(403) 432-1012

June 24-27, 1993
Annual Convention College of Dental Surgeons of Saskatchewan
(306) 652-0121

February/Fevrier 1993

February 10-14: Jamaica Dental Association Annual Convention being held at the Ramada Mallards Hotel, Ocho Rios, Jamaica. For more information, contact: Dr. Louis U. Knight, Chairman, Convention Committee, P.O. Box 19, Kingston 5, Jamaica.

February 13-20: Barbados Dental Association Convention. For more information and pre-registration (limited), contact: Lynne Brandon, CDA, CDR, at 85 Lonsdale Dr., London, Ontario N6G 1T4, or call: (519) 657-4306.

February 16-20: Australian and New Zealand Association of Oral and Maxillofacial Surgeons XVth Biennial Conference, will be held at the Sheraton Southbank, Melbourne, Australia. For more information, contact: Mr. D.W. Wiesenfeld, 766 Elizabeth

St., Melbourne, Australia, 3000.

February 18-19: The Edmonton and District Dental Society is presenting Avrom King "Moving Toward an Authentic Dental Practice." For details, contact: Ms. Joyce Weissenborn at (403) 434-2542.

February 20-21: Midwest Society of Periodontology 36th Annual Meeting will be held at the Stouffer Riviere Hotel in Chicago. For details, contact: Midwest Society of Periodontology, suite 212, 1775 Glenview Rd., Glenview, IL 60025, or tel: (708) 724-6396.

February 20-27: Virgin Islands Dental Association Convention. For more information and pre-registration (limited), contact: Lynne Brandon, CDA, CDR, at 85 Lonsdale Dr., London, Ontario N6G 1T4, or call: (519) 657-4306.

February 22-26: "Medicine Update Program for Dentists and Doctors." McMaster University continuing education course is being held at Chateau Lake Louise, Lake Louise, Alberta. For more information, contact: Ms. S. Studd, Continuing Education, Faculty of Health Sciences, McMaster University, Chedoke Campus TB74, 1200 Main St. West Hamilton, Ontario L8N 3Z5. Tel: (416) 521-7966.

March/Mars 1993

March 11: The Edmonton and District Dental Society is presenting Dr. John Nathan "Updates In Pediatric Dentistry for the General Practitioner." For details, contact: Ms. Joyce Weissenborn at (403) 434-2542.

March 11-13: 25th Annual Mid Winter Meeting and Bonspiel (Western Canada Dental Society) in Vancouver, B.C. Interested individual curlers or teams can obtain more information by contacting: Dr. Elgin Duke, Chairman, 10340-134A Street, Suite 206, Surrey, B.C. V3T 4B8. Tel: (604) 585-3177.

March 20-24: 27th Australian Dental Congress in Melbourne, Australia. For more details, contact: National Dental Congress Secretariat, P.O. Box 29, Parkville, Victoria, Australia 3052. Tel: (03) 387-9955.

April/Avril 1993

April 4-7: Conference: Focus on Children - Protecting our Future, jointly sponsored by the Canadian Organization for Victim Assis-

tance and Child Find Alberta, being held at the Calgary Convention Centre. For details, call: (403) 239-2920.

April 15-18: 5th International Congress on Preprosthetic Surgery in Vienna, Austria. For information, contact: G. Watzek, Congress President, Interconvention Austria Center Vienna, A-1450, Vienna, Austria.

April 16-17: Southern Ontario Surgical Orthodontic Study Group will meet in Windsor. For details, contact: Dr. Jeff Berger. Tel: (519) 258-2632, or fax: (519) 258-2637.

April 19-23: 2ème congrès d'Odonto-stomatologie de Côte d'Ivoire à Abidjan. Pour informations, contacter: Comité d'organisation, Dr. Adiko Eyholand F., 22 BP 512 Abidjan 22.

April 21-22: 10th International Oral Implant Symposium will be held at the Pan Pacific Hotel in Kuala Lumpur, Malaysia. For more details, contact: AOIA Secretariat, 268 Orchard Road #05-07, Singapore 0923, Republic of Singapore. Tel: (65) 734-3162.

May/Mai 1993

May 1: University of Toronto Class of 73 20th Reunion will be held in Toronto. For details, contact: Dr. Doug Johnston, tel: (416) 813-6008, or fax: (416) 813-6375.

May 27-30: Alberta Dental Association/Academy of Periodontology Annual Scientific Meeting will be held at the Jasper Park Lodge, Jasper, Alberta. For details, contact: Dr. D.A. Scott, 1038 Dentistry - Pharmacy Centre, University of Alberta, Edmonton, Alberta.

July/juillet 1993

July 1-3: British Dental Association Annual Conference being held at the Bournemouth Conference Centre, in Bournemouth, England. For details, contact: British Dental Association, conference office, 64 Wimpole St., London, England, W1M 8AL.

Postgraduate Education/1993, Opportunity to study in England, Master of Science in Gerodontology. For application forms and more details, contact: Dr. M.R. Heath, Department of Prosthetic Dentistry, The London Hospital Medical College, Turner Street, London E1 2AD, Tel: 071-377-7061.



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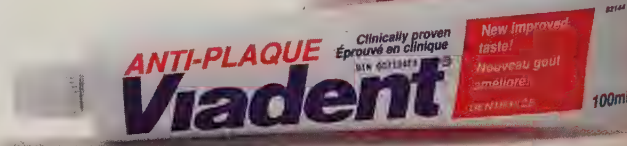
When your patients see red on their toothbrushes, chances are it's caused by bleeding gums associated with gingivitis. Viadent can help. Recent long term studies have shown Viadent's active ingredient, sanguinaria extract, to be effective in reducing plaque by 57%, gingivitis by 60% and sulcular bleeding by 45%.^{1,2}

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References:

1. Hanna JJ, Johnson JD, Kuflinec MM. Clinical evaluation of sanguinaria-containing toothpaste and oral rinse. American Journal of Orthodontics and Dentofacial Orthopedics, 1989, Vol. 3: 199-207
2. Harper DS, Mueller LJ, Fine JB, Gordon J, Laster LL. Clinical efficacy of a dentifrice and oral rinse containing sanguinaria extract and zinc chloride during six months of use. J Periodontol, 1990; 61: 352-358



News Update

CDA Holds Fall Planning Session

CDA's leaders and senior staff met in Val David, Quebec, last October to review the programs and services the association provides to its member dentists.

Much of the two-day planning session was devoted to validating CDA's current program objectives against its recently-revised mission statement and goals. New initiatives, including a student seminar program, were also discussed.

As part of this process, participants at the 1992 planning session reviewed CDA's 1993 budget. Programs and services were assessed with regard to their cost effectiveness, and specific budget adjustment proposals were considered. CDA is committed to achieving a balanced budget in 1993.

The recommendations resulting from the 1992 planning session will be fine-tuned by CDA's executive council in February. They will subsequently be presented to the board of governors for approval in May, during its interim meeting. ■

CDA Voices Concerns Over Hygiene Statement

A statement on the management of dental hygiene care, released by the Canadian Dental Hygienists' Association (CDHA), is causing concern to CDA's leaders.

CDA believes that the hygienists' statement does not reflect the principle that all health care professionals should act in the best interests of their patients.

The association has sent a letter to all members to inform them of its concerns in regards to CDHA's statement. This letter will also encourage dentists to discuss the supervision issue with their hygienists.

CDA approved its own statement on the supervision of dental hygienists last August. While it indicates that the actual working relationship between dentists and dental hygienists is the responsibility of provincial licensing bodies, the statement says that this relationship should be based on a number of clear principles. Specifically:

1. The dentist is accountable for the patient's overall oral health care and coordinates delivery because he or she is prepared and qualified to provide a

comprehensive differential diagnosis of oral health status, to plan and render treatment required, to delegate or refer specific aspects of treatment or to refer the patient to another dentist or physician.

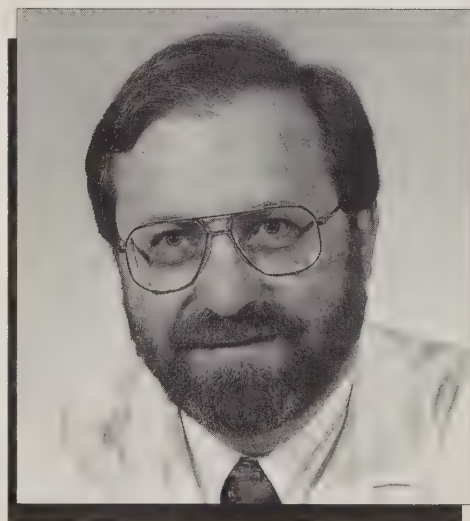
2. Comprehensive oral health care requires differential diagnosis and treatment planning by a dentist. Services provided by a dental hygienist are one component of comprehensive oral health care and should not be offered independently, but as part of a comprehensive treatment plan.

3. Optimal care is achieved when there is an effective working relationship between the dentist and dental hygienist. Comprehensive patient oral health care cannot be achieved if the dental hygienist is an independent practitioner.

4. Every individual has a fundamental responsibility for his/her own health and should be an active participant in achieving optimum oral health.

5. Dental hygienists licensed by dental licensing authorities should have representation, with full rights and responsibilities, on the board of the dental licensing authority. ■

Mount Sinai Hospital Appoints Dentist-In-Chief



Dr. David Mock

Dr. David Mock has been appointed dentist-in-chief of Toronto's Mount Sinai Hospital.

A professor of oral medicine and pathology in the University of Toronto's dental faculty, Dr. Mock joined the

Mount Sinai department of dentistry in 1974 and was cross-appointed to the department of pathology in 1975. He is currently the co-director of the hospital's craniofacial pain research unit, and a staff pathologist.

Dr. Mock is a past-president of both the Canadian Academy of Oral Pathology and the Ontario Society of Oral Pathologists. He is currently an examiner for the Royal College of Dentists of Ontario, in oral pathology and periodontics, and a dental consultant for the Metropolitan Toronto Zoo. ■

Bright Future Predicted for FDI

The Fédération Dentaire Internationale (FDI) has a "new" leader and a new constitution.

Dr. Clive Ross of New Zealand was sworn in as FDI's 1992-94 president during the organization's international congress in Berlin last October. He had served as the acting president of FDI since the death of Dr. Kazuo Yamazaki, who died in office last August.

"Global dentistry is becoming a reality and at a speed which none of us could have foreseen....," said Dr. Ross. "Our role, individually and collectively, is to show leadership and a responsibility that the privilege bestowed upon us as educated professional care givers requires. We are accountable."

Dr. Ross has established three main goals: to assist all FDI member organizations, of whatever size, to participate effectively in the debate and exchange of information within the federation; to ensure that the "backbone of FDI," the commission structure, can quickly and imaginatively respond to the needs of the members; and to create a financial basis to start programs that will make FDI even more attractive to the entire profession, to related professions and the dental industry.

FDI's new constitution – approved during the congress by a unanimous vote of the organization's general assembly – will almost certainly help Dr. Ross to achieve his objectives. Among other things, it guarantees that all parts of the world will be represented on FDI's council.

FDI made important strides in this direction in 1992, when the dental associations of Croatia, Ghana, Latvia, Nepal, Romania and Slovenia were ac-

cepted as members of the federation for the first time, and the dental associations of the Bahama Islands and Mauritius renewed their memberships.

Other changes to the constitution will see FDI's various commissions combined into one body, the FDI commission. The ongoing work of the federation's existing working groups will be included in the new commission's comprehensive project plan. In addition, a redefinition of the associate membership category should make it possible for small national associations to participate in FDI activities.

FDI's 1992 World Dental Congress attracted 4,062 participants from 90 countries, including 132 Canadians. Not surprisingly, Germany produced the most delegates, with 891. Sweden had the second highest number of delegates, 295, while Finland was third with 222. Then came Japan (210) and the United States (204), followed by Canada.

The theme for the scientific portion of the congress, which featured 379 presentations in 107 sessions, was "The Challenge of the '90s - living with new technology." A Canadian dentist, Dr. R. Charland, won first prize in the FDI/Unilever Table Clinic Awards competition.

Among other dignitaries to be honored during the congress, Dr. William Thompson, a past CDA president, was recognised for his work as FDI's treasurer. Dr. Thompson retired from the post last year.

FDI's 1993 congress will be held in Göteborg, Sweden. The organization's 82nd congress, to be hosted by CDA, will be held in Vancouver, Canada, in 1994. ■

Dental Officers Graduate



Brig.-Gen. J.F. Begin presents the DOTP Honor Candidate Trophy to Captain J.G.H. Levesque of the University of Montreal.

Fourteen candidates graduated from the Canadian Forces Dental Officer Training Plan (DOPT) last August.

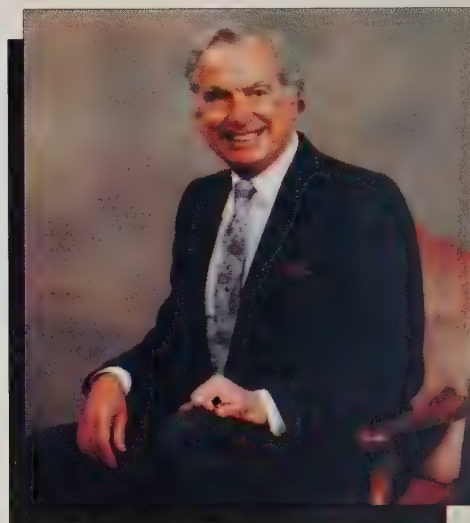


Brig.-Gen. J.F. Begin presents the DOTP Field Exercise Trophy to 2nd Lieut. I.M.B. Hucal of the University of Manitoba.

The program subsidizes the students' educational and living expenses in return for three or four years of obligatory service in the Canadian Forces Dental Services.

Dr. Les Allen, a CDA past-president, attended the 1992 graduation ceremonies to give a short speech to the students. The ceremonies, which were also attended by Brig.-Gen. J.F. Begin, the Forces' director general of dental services and representative to the CDA board of governors, took place at CFB Borden in Borden, Ontario. ■

Former Journal Editor Appointed to Ontario Health Council



Dr. Wesley J. Dunn

A former editor of the *CDA Journal* has been appointed to the Thames Valley District Health Council.

Dr. Wesley J. Dunn, the founding dean of the University of Western Ontario's dental faculty and a professor

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	November 30, 1992	October 31, 1992
Bond & Mortgage Fund	100.06827	101.47853
Common Stock Fund	17.62614	17.71757
Money Market Fund	61.82856	61.90964
Balanced Fund	36.50557	36.83530

G.I.C. Fund Term	Interest rates as at	
	November 30, 1992	October 31, 1992
1yr	6.75%	6.60%
2yr	6.85%	6.65%
3yr	7.35%	7.10%
4yr	7.60%	7.35%
5yr	8.00%	7.85%

(*rates subject to change without notice.)

Total Assets (market value) of the Plan as of		
	November 30, 1992	October 31, 1992
	166,649,185.30	\$167,652,423.20

For further information:

Write:

or phone, toll free:



CDSPI

Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

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1-800-561-9401

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1-416-296-8920

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emeritus, was *Journal* editor from 1953-1959. He was appointed to his new post by an order in council of the Ontario government.

The Thames Valley District Health Council is responsible for planning activities related to the health care needs of Ontario's Elgin, Middlesex and Oxford counties, and for advising the minister of health on the health care needs and priorities of the district.

Dr. Dunn is an honorary member of both CDA and the Ontario Dental Association, and is a recipient of ODA's Barnabus W. Day Award. ■

Nominations Sought

Nominations are being sought for the 1993 Manning Awards.

Each year, the Ernest C. Manning Awards Foundation presents four cash prizes to Canadians who have imagined and developed new concepts, procedures, processes or products of benefit to Canada. The foundation's Principal Award is worth \$100,000, while the Award of Distinction carries a \$25,000 prize. There are also two Innovation Awards worth \$5,000 each.

Nominees for the Awards must live in Canada and be Canadian citizens. Nomination forms for the 1993 competition must be submitted by February 12, and are available from: The Manning Awards, 2300, 639 Fifth Ave. S.W., Calgary, Alberta T2P 0M9. ■

New Drug Concerns Health Protection Branch

The Health Protection Branch of Health and Welfare Canada has sent a letter to physicians to inform them about recent reports concerning adverse reactions to Toradol.

The letter, signed by Kent R. Foster,

the assistant deputy minister for the Health Protection Branch, says:

Re: Toradol – A Nonsteroidal Anti-Inflammatory Drug (NSAID)

The Health Protection Branch is concerned about the possible misuse of Toradol in patients for whom it is contraindicated based on serious adverse events including fatalities.

Toradol (ketorolac tromethamine), an analgesic belonging to the non-steroidal anti-inflammatory drug (NSAID) class, has been available in Canada since 1991. It is the first NSAID to be marketed in both injectable and oral formulations. Toradol is indicated for the short-term management of mild to severe pain. Post-marketing experience with Toradol, as with other NSAIDs, suggests that the risk of gastrointestinal complications is increased in the elderly.

Since the introduction of Toradol, the Health Protection Branch has received reports of six fatalities in Canada associated with the use of Toradol in elderly patients (mean age 76 years). There have been 25 reports of episodes of non-fatal gastrointestinal bleeding, 15 occurring in patients over 65 years of age. As with the U.S. reports, our reports show that the severe reactions were occurring primarily in patients known to be at risk for developing such reactions to NSAIDs. They include the elderly, patients with histories of gastrointestinal problems and with known sensitivities to NSAIDs. Studies with NSAIDs have not identified any subset of patients which is not at risk for the development of peptic ulceration and bleeding.

Severe allergic reactions have also been reported in Canadian patients receiving Toradol. These events, which included urticarial rash, bronchospasm, and/or anaphylactic reac-

tions also have been reported with other NSAIDs. Several of these cases occurred in patients who had histories of hypersensitivity to acetylsalicylic acid (ASA) or other NSAIDs.

The Health Protection Branch wishes to remind physicians that Toradol is a NSAID, and the contraindications, warnings and precautions pertaining to this class of drugs must be taken into consideration before prescribing the drug. Toradol is contraindicated in patients who have peptic ulceration or active inflammatory disease of the gastrointestinal system as well as in patients who have a known or suspected hypersensitivity to the drug. Because of possible cross-sensitivity, Toradol should not be used in patients who have exhibited the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations in response to ASA or other NSAIDs. In other countries, severe and fatal anaphylactic reactions have occurred in such individuals following the administration of Toradol, as with other NSAIDs.

The Health Protection Branch will continue to closely monitor the use of Toradol. ■

CFDE Obtains Corporate Support For New Programs

The generous financial support of a corporate sponsor allowed the Canadian Fund for Dental Education (CFDE) to develop two new and innovative dental programs at the end of 1992.

In cooperation with CFDE, Nobelpharma Canada Inc. has established the Branemark Cranio-Maxillofacial Rehabilitation Program. Through the program, the company will provide Branemark System components to patients in financial difficulty who require osseointegration treatment.

DISTRICT OF COLUMBIA DENTAL SOCIETY – WASHINGTON, D.C.

61st ANNUAL SPRING MEETING

Registered Clinicians

Ms. Jennifer de St. Georges—*Practice Management*
Dr. Norman Feigenbaum—*Smile Design*
Dr. John Kanca—*Adhesives*
Dr. Robert Lorey—*Crown and Bridge*
Dr. Ed McGlumphy—*Implants*
Dr. Jonathan Scharf—*Cosmetics*
Dr. Annette Weintraub—*Infection Control*
Mr. Doug Young—*Practice Management*

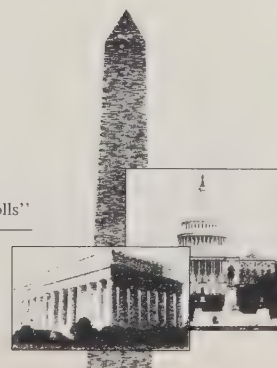
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For more information:

1993 Spring Meeting
D.C. Dental Society
502 C Street, N.E.
Washington, D.C. 20002-5810 USA
(202) 547-7613
FAX: (202) 546-1482



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Address _____

City _____ Country _____

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The new program is available to teaching hospitals affiliated with Canadian university faculties of dentistry and medicine.

In addition to the rehabilitation program, Nobelpharma Canada has also started the Branemark Cranio-Maxillo-facial Rehabilitation Fund. Through CFDE, the company will contribute \$2,000 to this developing fund annually over the next five years. Once the fund reaches \$10,000, the interest income it generates will be used to promote educational programs related to reconstructive surgery based on the principles of osseointegration.

Other Companies Fund CFDE Activities

Oral B Laboratories Inc. helped CFDE to celebrate its 30th anniversary in 1992, by providing toothbrushes imprinted with "Happy 30th Anniversary" greetings as well as T-shirts. Both the brushes and shirts were used in a special CFDE fund-raising drive held during the 1992 CDA convention in Calgary and the Toronto Winter Clinic.

Proctor & Gamble/Crest also made a significant contribution to dental education in 1992, by donating \$10,000 to the 1993 CDA/CFDE teaching conference on the current status of hospital dentistry in Canada.

This year's teaching conference will provide a forum for a comprehensive discussion on hospital dentistry. Several topics, including educational and research responsibilities, service commitments, the accreditation process, administrative and financial support will be discussed.

Corporate sponsorship plays a vital role in financing CFDE's dental education and research programs. The continued support of its sponsors, together with annual contributions from dentists and allied dental health professionals, will allow CFDE to develop new and innovative programs in 1993 and beyond. ■



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Anti-Plaque/Anti-Gingivitis Preparations

INDICATIONS: Adjunctive treatment for the maintenance of good oral hygiene, control of dental plaque and the reduction and inhibition of gingivitis.

CONTRAINDICATIONS: Other than hypersensitivity to Viadent or one of its components, there are no contraindications to the use of this product.

PRECAUTIONS: It is possible that Viadent Anti-Plaque preparations may interact chemically with other orally applied drugs, although no such drug interactions have been reported to date. Routine swallowing of the product is not recommended.

Staining of dental restorations does not appear to be a problem with Viadent preparations. In laboratory testing with the rinse, only one light-cured composite, Durafil-Kulzer, was slightly yellowed after immersion in the rinse for 24 hours.

Use of Viadent Anti-Plaque preparations is not recommended in pediatric oral health programs due to the alcohol content in the rinse and for the toothpaste, when caries is the principal dental disease and for which a fluoride product is indicated.

The safe use of Viadent Anti-Plaque preparations during human pregnancy and lactation has not been established. As with any drug, use during pregnancy or lactation requires that the expected therapeutic benefit of the drug be considered against the unknown risks to the mother, foetus or neonate.

DOSAGE AND ADMINISTRATION: Viadent Anti-Plaque Oral Rinse: Administer after brushing morning and evening. Rinse twice consecutively using 15 mL per rinse for 15 seconds each time.

Viadent Anti-Plaque Toothpaste: Administer as a ribbon of paste on a toothbrush morning and evening.

SUPPLIED: Viadent Anti-Plaque Oral Rinse: Bottles of 500 mL.

Viadent Anti-Plaque Toothpaste: Tubes of 50 mL, 100 mL.



THE ROYAL COLLEGE OF DENTISTS OF CANADA

LE COLLEGE ROYAL DES CHIRURGIENS DENTISTES DU CANADA

INFORMATION FOR CANDIDATES INTERESTED IN THE MEMBERSHIP AND FELLOWSHIP EXAMINATIONS OFFERED BY

THE ROYAL COLLEGE OF DENTISTS OF CANADA

The examinations for Membership and Fellowship in the College are held twice a year in all dental specialties recognized by the Canadian Dental Association and/or the American Dental Association.

The opportunity to sit these examinations is offered to those who qualify following graduation from an approved graduate or post-graduate program.

The Examination held in May/June and October/November. Deadlines for applications for each session are March 1st and August 15th.

Successful completion of the examinations qualifies the candidate for inclusion in the College's Register of Fellows and Members and the use of the designation FRCD(C) or MRCD(C).

Information concerning the examinations and application forms are available from:

The Royal College of Dentists of Canada,
67 Berkeley Street,
Toronto, Ontario M5A 2W5
(416) 367-5373

Book Reviews

The Temporomandibular Joint: A Biological Basis for Clinical Practice, 4th Ed.

Edited by B.G. Sarnat and D.M. Laskin

1992, W.B. Saunders Co., Philadelphia
505 pages, B & W illustrations, \$100 (U.S.)

Thirty authors have contributed to this fourth edition, an increase of 12 from the previous edition, published in 1980. Most of the authors are from the United States, although others are from Canada, England, Scotland and Sweden.

From the book's first chapter on the evolution of the jaw and temporomandibular joint (TMJ), to its last chapter on the differential diagnosis of masticatory dysfunction, its coverage of the subject is extensive. There are chapters on morphogenesis, growth, anatomy, neurophysiology, pain, pathology, congenital abnormalities, epidemiology of TMJ disease, history taking, imaging, diagnosis and etiology, non-surgical and surgical treatment, and other topics.

The concepts of TMJ pain/dysfunction have been complicated by Wilkes and others' arthrographic demonstration of interarticular disc displacement, however. It is now accepted that disc displacement occurs both in a transient, self-correcting form, and in a permanent form. Still, in some patients with permanently displaced discs, minimal, if any, symptoms, occur.

From about 1950 to 1980, there was an ongoing controversy between those who maintained that occlusal disharmony was the basic cause of TMJ disorders and those who believed, following Schwartz, that they were stress induced, with the stress giving rise to the so-called myofascial pain dysfunction syndrome (MPD). Disc displacement had no place in either one of these theories, although it is perhaps easier to include this phenomenon in the former theory.

The book's authors, who have been strong proponents of the MPD hypothesis, present no explanation to reconcile today's acceptance of disc displacement with these earlier theories. Instead, they imply that MPD and disc displacement may be separate and distinct causes of TMJ pain/dysfunction. Applying Oc-

cam's razor, this would seem unlikely.

Despite this failure, the authors do provide some discussion on the treatment of patients with displaced discs. Prosthetic recapturing techniques are considered to have been unsuccessful in most cases, and surgical repositioning or meniscectomy are recommended. However, no assessments of success or failure are given.

As the TMJ is of such central importance in dentistry, this well-written book is recommended to all members of the profession. While it may make its readers wiser, it will also undoubtedly make them realize that there is still much to learn.

Reviewed by:

J.H.P. Main, BDS, PhD, FDSRCSE, FRCD(D), FRC Path.

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Dentistry in the 21st century: A Global Perspective

By Richard J. Simonsen

1991, Quintessence Publishing Co., Chicago

262 pages, 72 illustrations, \$20 (U.S.)

The future of the dental profession is explored in this book, which reproduces a selection of the papers presented at an international symposium on dentistry in the 21st century. Ironically, the symposium was held in Berlin during the time when the Berlin Wall still divided this great city. It is probably safe to assume that neither the conference participants, nor the readers of this book, could have predicted the monumental events that were to occur after the symposium, when political parties as well as the wall came tumbling down in Berlin.

The future of dentistry also seems to be difficult to predict. At the opening of the discussion session, Dr. Harold Loe, the director of the National Institute of Dental Research (NIDR), reminded participants that no one predicted the tremendous changes that are currently being observed in oral diseases (decline in dental caries and tooth loss, for example). It seems clear that there are many known and yet-to-be identified factors that will continue to shape the future of the dental profession.

This book contains the ideas of a

select group of authors from 22 different countries. Each presents his or her view of what dentistry will be like in the next century. Some concentrate on the rapid development of new technology in dentistry, such as diagnostic molecules, anti-attachment approaches, new vaccines, and new antibodies, among other advances. Others discuss the needs and demands for dental care in the future, dental treatment, preventive dentistry, geriatric dentistry, the decline in dental caries, increased tooth retention, and the growth in the number of individuals over the age of 65.

The papers introduce hypothetical ideas of the future rather than a real vision of where dentistry will be in the 21st century. For instance, will there be a need for dentists? How many? What will their qualifications be? What role will dental auxiliaries play?

In many ways, the open discussion that took place following the presentations, which is transcribed and included in this book, is more lively than the papers themselves. During these exchanges, Dr. George Zarb, from Canada, said that: "We are the only health field which, within the next quarter century, will make ourselves obsolete."

While the dental profession may never be obsolete, it certainly will be different in the next century. For example, the conference participants discussed whether the dentist of the future will be a stomatologist or a physician of the mouth. There was general recognition that the technical side of dentistry, as it is defined today, will not remain the *raison d'être* for the dental profession. Diagnosis, prevention, and new trends, such as esthetic dentistry, physician of the mouth or stomatologist, are on the way.

Another prediction concerned the increased role that dental health consumers are likely to have in treatment planning. In the future, defining the needs and wants of dental consumers may be a collaborative process involving both the dental profession and the people it serves. Similarly, the trend toward the increased marketing of dental and orthodontic care was presented through examples of successful campaigns.

However, the reader should be warned that marketing dental care is not as easy as marketing many other products and services. It may be better to consider marketing oral health and pre-

ventive care rather than treatment (the tooth whitening advertisements are good examples).

Another area of discussion, initiated by participants from developing countries, was the overwhelming social, economic, and disease problems that exist in the Third World. With 80 per cent of the earth's dentists serving 20 per cent of its population, it is no surprise that many developing countries are concentrating on health education and preventive management. In China, for example, prevention rather than repair is being used to combat oral disease. Dental care is thereby sidestepping the reparative dentistry model that we still live by in many parts of the world. (The current children's insurance programs in Canada confirm that we are still in the reparative mode here.)

Without doubt, the most commonly repeated word at the conference was "research." It was the introduction of a scientific method in dentistry that allowed the major new advancements to occur. Recent advances in basic and applied research have significantly benefited the public. These advances will also open new doors for dentistry in the 21st century. However, "science is changing very fast. The researchers are still in the driver's seat. The gap between science and the practise of dentistry is definitely getting smaller."

Three themes emerged from the symposium: research, prevention, and collaboration. There are too many distinctive differences in dental advances and oral health around the world to have one single prediction that could apply to everyone and every place. Dentistry is facing and will continue to face many challenges. Change is inevitable.

This book is recommended for educators, administrators, and dental leaders who want to review ideas about the future of the dental profession, dental

education, and dental practice.

*Dr. Amid I. Ismail, BDS, MPH, DrPH
Associate professor and chair, department of pediatric and community dentistry, faculty of dentistry, Dalhousie University*

Dental Implants: Principles and Practice

Edited by Charles A. Babbush

1991, W.B. Saunders Co., Philadelphia
324 pages, B & W and color illustrations

Dr. Babbush is a highly respected clinician and lecturer in the field of dental implants. In this book, he has compiled the contributions of other, well-known scholars to create a much-needed overview of the currently-available implant systems. The book, with its detailed descriptions of both surgical and prosthetic implant procedures, may be useful to both specialists and general practitioners. It goes beyond system-specific discussions, providing introductory chapters on patient selection, bone response, biomaterials and pre-surgical evaluation using computed tomography, and closing chapters on practice management and medico-legal considerations in implant dentistry. However, it should be noted that the last two chapters are applicable to an American model and may be less appropriate for Canadian practitioners.

The book's descriptions of some of the most widely-used implant systems – IMZ, Branemark, T.P.S. Screw, ITI, fixed mandibular (staple) implant, and the subperiosteal implant – are thorough and complete. While this information can generally be found in other publications, the authors have included additional chapters on the uses of hydroxyapatite and magnetic retention. These chapters provide good overviews on

subjects that are only briefly covered in most other publications. Philip Boyne's chapter on bone response to endosseous implants, for instance, is of particular value. It provides both an excellent review and a new way of looking at osseointegration that may expand the applications of dental implants.

There are, however, two disappointing facets to this book. One is the lack of a critical comparison of the various systems described by the authors. As a result, clinicians must evaluate the merits of each approach on their own. The second disappointment is the inclusion of chromium-cobalt mandibular subperiosteal implants, which have not been shown to osseointegrate. In addition to the fact that this system has not been subjected to the same rigorous evaluations described in the chapter on biomaterials, this chapter contains many outdated prosthodontic terms ("freeway space," "bite registration"), and there are no scientific references more recent than 1986. Indeed, the consensus cited to support the use of this system is dated 1980, and has since been superseded by the more rigorous criteria for success proposed by Albrektson et al in 1986.

These two drawbacks aside, the book provides a worthwhile compendium of current implant systems, including pre-treatment evaluation and planning guidelines. It is well-written and organized in a logical manner, and with the exceptions noted above, is generally well-referenced. In the hands of a clinician prepared to read elsewhere for a more critical comparison of these systems, it would be a valuable reference tool.

Reviewed by:

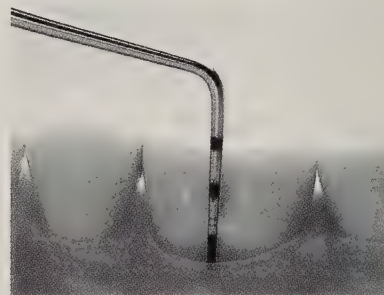
*Joanne N. Walton, CD, DDS, Cert.
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Assistant professor, division of prosthodontics, department of clinical dental sciences, University of B.C.

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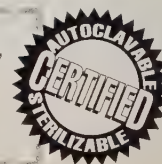
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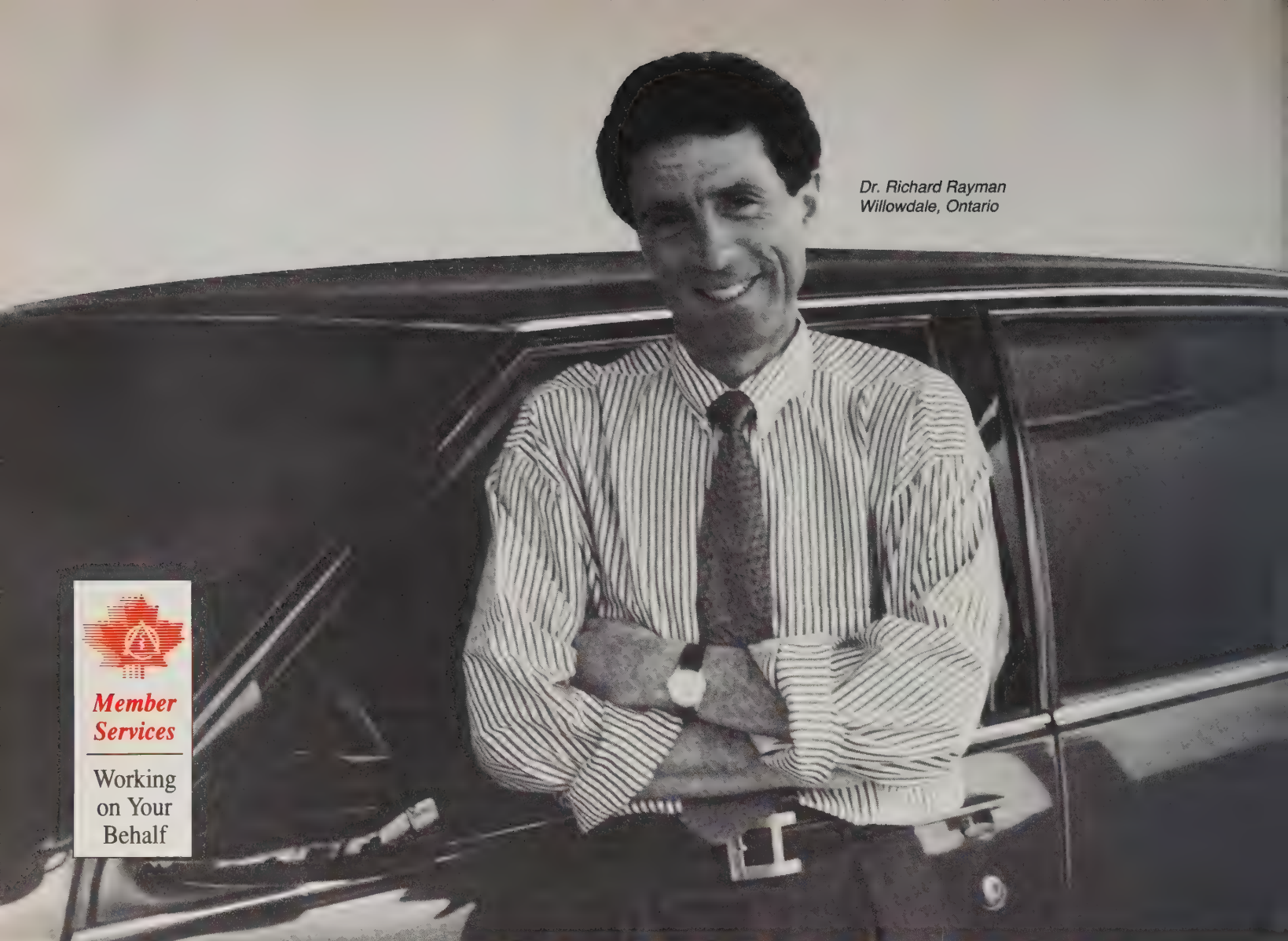


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Practice Management & Success

The New Patient Experience Putting Your Best Foot Forward

The New Year traditionally marks a time of personal and professional reflection. It seems to be a pivotal point, a time when resolutions are made – from engaging in a regular physical fitness program to better managing personal finances – and often broken.

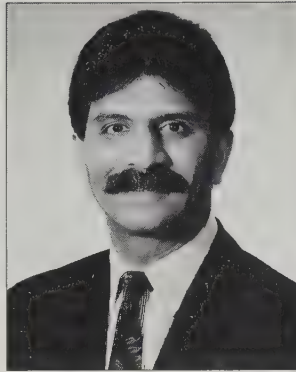
But as you begin to assess where you've been, where you are and where you would like to be, consider getting back to practice management basics, such as the new patient experience. Make one of your 1993 resolutions a commitment to reviewing how you treat new patients and, if necessary, implementing new strategies. Equally important, make sure that this is one resolution that doesn't get broken.

The Indispensable New Patient Experience

In the day-to-day busyness of the dental practice, it's not uncommon for staff to lose sight of how fundamentally important it is to treat new patients with care and courtesy. Nevertheless, creating a positive new patient experience is probably one of the most critical components of overall case management, given that it can lead to a thriving hygiene department, long-term case acceptance, patient retention, and referrals.

Even those practices that make a conscious effort to create a positive new patient experience will run into problems unless they develop and execute a consistent, well-documented strategy for treating new patients. Relying solely on the good intentions of individual staff members – a common practise – is precariously misguided, as it makes the new patient experience a voluntary rather than a mandatory responsibility.

Staff members should have easy access to your practice's strategies and objectives for the new patient experience, which should be documented in an employee handbook or a policies and procedures manual. By making these strategies readily available, you send a clear message to your staff that the new



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patient experience is part of their overall responsibilities, and you let them know exactly what your expectations are vis a vis new patients.

The new patient experience is but one of many case management tools. However, because it's your first window of opportunity when it comes to establishing effective, long-term case management, its potency cannot be underestimated. If the new patient experience goes astray, you won't have a chance to use any of the other case management aids, because they are all dependent on the successful integration of new patients into your practice. An attractive office decor, streamlined scheduling, and sophisticated internal marketing will all go for naught if the new patient experience is neglected.

Starting with the patients' initial appointment, the new patient experience should demonstrate your practice's commitment to ongoing communication and patient education. Informed patients are motivated to achieve optimal oral health and well-equipped to participate in vital decisions regarding dental treatment.

The successful integration of patients into your practice has a domino effect – it can also bring in the families, friends and colleagues of these patients. In other words, once you've established a rapport with patients, they may become ambassadors for your practice. When the subject of quality dentistry surfaces in the social or professional milieus of these ambassadors, it may well be your name that is tossed about.

How It's Done

Investing in a sound new patient experience will produce a number of much sought-after practice dividends: educated patients, enhanced case acceptance and increased new patient flow in the form of referrals. But how exactly is it done? The main elements of the new patient experience are:

- The Initial Contact
- New Patient Arrival
- New Patient Interview
- Exam and Diagnosis
- Post-Examination Consultation
- New Patient Dismissal

The Initial Contact

The new patient experience begins with the patient's first telephone call to your office. From the moment a new patient contacts you, that first impression clock starts ticking. No matter how hectic a day your receptionist may be having, her voice must convey professionalism. Both the words and the tone must be welcoming.

The first step is to gather basic information about the new patient: name, phone number, date of last X-rays, need (if any) for pre-medication, and referral source. Next, the receptionist establishes the date for the patient's first appointment, preferably no later than one week after the initial contact. It's also important to inform the patient about the anticipated length of the appointment and what to expect (i.e., having their medical/dental history documented, a full clinical exam and the necessary X-rays taken). Finally, the patient is asked to bring along his or her insurance information and a written list of the medications he or she is taking.

New Patient Arrival

Prior to a new patient's arrival at your practice, make sure that your team is aware of the impending visit, and discuss the referral source (if known) at your morning staff meeting.

When the patient does arrive, the

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receptionist or practice "greeter" should welcome him or her by name. The treatment coordinator then introduces herself, and accompanies the patient to the consultation room. (For the purposes of this article, the main player in the new patient experience is called the treatment coordinator. You may prefer to use another title in your practice.)

New Patient Interview

The treatment coordinator conducts the initial interview, which is used to document the patient's relevant dental history and to establish a feeling of trust. Basically, the interview is an opportunity to learn about the new patient's: personality, agenda, concerns, fears, past dental experiences, referral source, motive for choosing your practice, insurance information, dental IQ, oral health goals, and medical history. It's also the appropriate moment for the treatment coordinator to convey how your office functions administratively, vis a vis your payment policy, assignment, appointment bookings and cancellations.

Infection control – a high profile, highly-sensitive issue – should also be discussed during the interview. Practices that sidestep this subject are out of step with current thinking. Patients want to be informed and assured that your sterilization practises meet or exceed the recommended guidelines. If you really want to be thorough, give new patients a tour of your sterilizing facility before they leave your office.

When the initial interview is complete, ask the patient to review, sign and date the interview form while you prepare the operatory. For those few moments that the patient is alone in the consultation room, he or she will have the opportunity to reflect on the interview and mentally prepare for the next phase of the appointment. If you've shown the patient photographs of your staff or family, continuing education diplomas, or before and after photographs of treatment, he or she will have another opportunity to consider your professionalism.

Exam and Diagnosis

Once they have arrived in the operatory, the treatment coordinator introduces the patient to the dentist and relays the key points discussed in the initial interview. The patient then

A Case in Point

Dr. Sam Kherani, a general dentist in Calgary, Alberta, is one dentist who fully recognizes the merits of the new patient experience. For nearly 18 months, he's welcomed new patients in a consistent, organized, informative manner.

"We used to bring patients directly to the operatory," said Dr. Kherani, "where I was the first player they would really meet."

That's no longer the case. Dr. Kherani has now made one staff member fully responsible for the new patient experience in his practice, practice facilitator (i.e. treatment coordinator) Georgette Mercer.

Georgette believes that the new patient experience allows patients to feel safe, to find out what's going to happen and why.

"I begin the interview by telling patients that although we gathered some basic information over the phone, more details about their past experiences and medical history are needed in order to serve them better," said Georgette, who wears street clothes at work to separate her role from that of the clinical team.

"Nobody really likes going to the dentist, but the new patient experience can help to replace past negative images with positive ones. It's especially useful for fearful patients because it reassures them and makes them feel safe..."

"Patients often say things like,

"I've never been through this before – it's great."

Dr. Kherani believes that the new patient experience does two important things for the patient. "It not only prepares them for what's to come, it makes them feel special. They realize that we're trying to provide a very thorough service."

He credits the introduction of his new patient experience strategy with increased case acceptance and his present referral rate, which is the highest his practice has ever seen. "I'm convinced that word of mouth advertising is what's working for us."

And the new patient experience isn't just working for Dr. Kherani's patients. "It's increased the responsibilities of my staff and they like that. It's made managers out of them. The new patient experience has served to amplify our team spirit."



knows that his or her concerns have been accurately communicated.

Patient participation in the clinical exam is crucial. The dentist should take a few moments to explain the functions of the various diagnostic instruments, such as the periodontal probe and the explorer. Offering patients a hand mirror so they can watch you work in their mouth, and letting them know that they need only raise a finger if they have a question, are also good ideas.

Make sure to communicate the purpose of the clinical exam, as well as the expected benefits, namely: to identify areas of concern, and then work together to develop the best treatment plan. Explain what each phase of treat-

ment will accomplish, including the hygiene team's role. For example, you might say: "Phase one of treatment for our patients restores the gums and existing teeth to ideal health. We teach you to maintain that level of health before we move on to more advanced treatment in phase two."

Before you leave the operatory, you should inform new patients that your practice goals include enhancing their dental awareness so that they can make informed decisions about their dental treatment. The treatment coordinator then takes the necessary X-rays and sets up a hygiene appointment for the patient. (Try to schedule the appointment within one week of the clinical

exam, as the potential for patient motivation to wane usually increases with time.)

Post-Examination Consultation

Back in the consultation room, questions can be answered, concerns addressed and fees explained. As an added gesture of personal service: take a Polaroid photo of new patients for their files. This will allow current staff to recognize new patients, and new staff to recognize established patients.

It's important to give your new patients any practice identity materials you have, from the latest issue of your patient newsletter or practice brochure to a welcome package. Business cards – which patients can easily pass on to family, friends and colleagues – are also an effective tool.

New Patient Dismissal

After scheduling and confirming the patient's hygiene appointment, the treatment coordinator escorts the patient to the reception desk, where payment is accepted and the patient is dismissed.

The treatment coordinator then returns to the consultation room to finalize the details and create any necessary pre-determinations. "Tickler" reminders should be created to ensure that patient follow-up occurs.

When new patients come back for their hygiene appointment, have the treatment coordinator introduce them to the hygienist. This not only provides continuity, it also allows the treatment coordinator to show patients that their treatment plan and diagnosis have been relayed to the hygienist.

Summary

By implementing a consistent new patient experience, your practice will have put its best foot forward. It's the first step toward achieving your next challenge: turning new patients into established patients. This requires you to provide quality dentistry and a high level of service during each and every patient visit.

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Xerostomia

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1. Abelson, D.C. and others. "Effect of sorbitol sweetened breath mints on salivary flow and plaque pH in xerostomic subjects." *J Clin Dent Spr.* 1989; 1(4):102-5.

2. Abelson, D.C. and others. "The effect of chewing sorbitol-sweetened gum on salivary flow and cemental plaque pH in subjects with low salivary flow." *J Clin Dent* 1990; 2(1):3-5.

3. Baker, K.A. and others. "Medications with dental significance: usage in a nursing home population." *Spec Care Dentist* Jan-Feb. 1991; 11(1):19-25.

4. Bjornstrom, M. and others. "Comparison between saliva stimulants and saliva substitutes in patients with symptoms related to dry mouth. A multi-centre study." *Swed Dent J* 1990; 14(4):153-61.

5. Brown, R.S. and others. "Burning mouth syndrome due to xerostomia and/or a tartar-control dentifrice: report of a case." *J Gt Houst Dent Soc* Apr. 1991; 62(9):3-4.

6. Brundage, S. "Use of lozenges may cause dry mouth." *Postgrad Med* Jan. 1989; 85(1):35.

7. Butt, G.M. "Drug-induced xerostomia." *J Can Dent Assoc* May 1991; 57(5):391-3.

8. "Causes of dry mouth." *Practitioner* Jun. 8, 1990; 234(1490):610-5.

9. Darnell, J.A. and Saunders, M.J. "Oral manifestations of the diabetic patient." *Tex Dent J* Feb. 1990; 107(2):23-7.

10. "Dry mouth and functions of saliva." *Practitioner* Jun. 8, 1990; 234(1490):605-9.

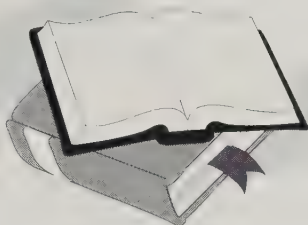
11. "Etiology and clinical manifestations of xerostomia." *Northwest Dent* May-Jun. 1989; 68(3):28-9.

12. Epstein, J.B. and Scully, C. "The role of saliva in oral health and the causes and effects of xerostomia." *J Can Dent Assoc* Mar. 1992; 58(3):217-21.

13. Epstein, J.B. and others. "Management of xerostomia." *J Can Dent Assoc* Feb. 1992; 58(2):140-3.

14. Ferguson, M.M. "Management of patients with xerostomia." *Comp Suppl* 1989; (13):S470-5.

15. Gilpin, J.L. "Xerostomia: a review for dental hygienists." *J Dent Hyg* Mar.-Apr. 1989; 63(3):111-4.



16. Henricsson, V. and others. "Evaluation of an infrared light absorption method for objective assessment of oral mucosal dryness." *Acta Odontol Scand* Aug. 1991; 49(4):219-23.

17. Krehner, J.M. and others. "Oral yeasts, mucosal health, and drug use in an elderly denture-wearing population." *Spec Care Dentist* Nov.-Dec. 1991; 11(6):222-6.

18. Kusler, D.L. and Rambur, B.A. "Treatment for radiation-induced xerostomia. An innovative remedy." *Cancer Nurs* Jun. 1992; 15(3):191-5.

19. Ladd, L. "The dry mouth dilemma." *Oncol Nurs Forum* May-Jun. 1991; 18(4):785.

20. Levine, R.S. "Saliva: Xerostomia - etiology and management." *Dent Update* Jun. 1989; 16(5):197-201.

21. Manthorpe, R. and Axell, T. "Xerostomia." *Clin Exp Rheumatol* Jul.-Aug. 1990; 8 Suppl 5:7-12.

22. McDonald, E. and Marino C. "Dry mouth: diagnosing and treating its multiple causes." *Geriatrics* Mar. 1991; 46(3):61-3.

23. Navazesh, M. "Xerostomia in the aged." *Dent Clin North Am* Jan. 1989; 33(1):75-80.

24. Niedermeier, W.H. and Kramer, R. "Salivary secretion and denture retention." *J Prost Dent* Feb. 1992; 67(2):211-6.

25. Odum, O. "Preventive resins in the management of radiation-induced xerostomia complications." *J Esthet Dent* Nov.-Dec. 1991; 3(6):227-9.

26. Odusola, F. "Chewing gum as aid in treatment of hyposalivation." *N.Y. State Dent J* Apr. 1991; 57(4):28-31.

27. Spigset, O. "Oral symptoms in bulimia nervosa. A Survey of 34 cases." *Acta Odontol Scand* Dec. 1991; 49(6):335-9.

28. Sreenby, L.M. "Salivary flow in health and disease." *Compend Suppl* 1989; (13):S461-9.

29. Strahl, R.C. and others. "Salivary flow rates: a diagnostic aid in treatment

planning." *Clin Prev Dent* Oct.-Nov. 1990; 12(4):10-12.

30. Wardrop, R.W. and others. "Oral discomfort at menopause." *Oral Surg Oral Med Oral Pathol* May 1989; 67(5):535-40.

31. Zachariasen, R.D. "Diabetes mellitus and xerostomia." *Compendium* Apr. 1992; 13(4):314-16, 318-22.

Acquisitions

Books

1. Dembo, J.B. *Inpatient and outpatient anesthesia & sedation.* OMSCNA. November 1992.

2. Hansson, T.L. *Physical therapy in craniomandibular disorders.* Quintessence : Chicago, 1992.

3. McNeill, C. *Current controversies in temporomandibular disorders.* Quintessence : Chicago, 1991.

4. Schatz, J-P, and Joho, J-P. *Minor surgery in orthodontics.* Quintessence : Chicago, 1992.

5. Shosenberg, J.W. *The rise of the Ontario Dental Association.* ODA : Toronto, 1992.

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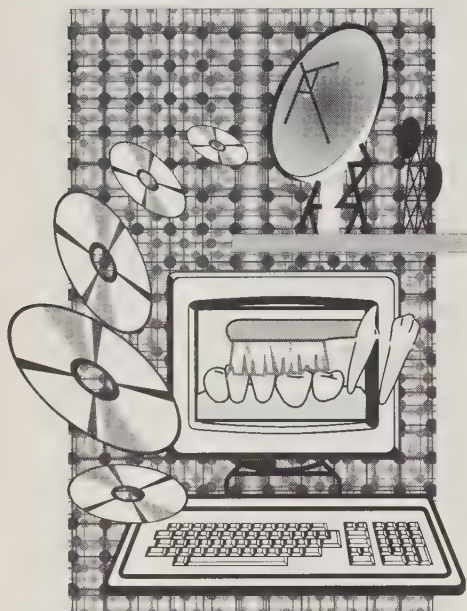
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Now, imagine that this efficient and knowledgeable addition to your staff will do all this for you each month for just half (or less) of the average monthly salary of one of your current employees.

Where can you find this personality? In a comprehensive, well-designed computer system for the '90s. If you thought that a dental office computer system was just for accounting, billing, insurance and word processing, think again.

The comprehensive dental office computer systems of the '90s will offer much more than a business management package restricted to the administrative areas of your practice. These systems will also have a place in the back of your office, where you deliver patient care. Among other things, they will help you in diagnosis, treatment planning, motivating patients to accept a proposed treatment plan, and providing a higher standard of care. And they will do all this without requiring you to become a computer expert, or even to change the way you work. The end result will be less stress for you, and enhanced satisfaction for your patients.

For the past five years, we have been using a computer system in our office in just this way. We keep our patients complete clinical charts on computer, including intraoral, extraoral and radiographic images of their teeth, mouth, and face. Our system has text and graphic capabilities that allow us to

show patients exactly what their dental problems are. We can also show patients how they could look if they followed our preferred treatment plan or chose one of our alternative plans. The process is not only educational, resulting in greater patient acceptance of the preferred treatment strategy, it also leads to enhanced risk management, as patients are better informed before they consent to treatment.

Of course, all our practice information (data) is stored in a manner that allows it to be retrieved by any one of the computer's application programs. In other words, a treatment plan entered into the patient's chart can also be used to make an appointment for the patient through the computer's scheduling program, as well as to generate an insurance form through the computer's billing system.

A Humanistic Approach

Among the stumbling blocks that have given some dentists second thoughts about making full use of computers in their practices is the perception that these machines make dentists appear impersonal and uncaring to their patients. Whether this is a valid criticism depends on two important factors: the manner in which these hi-tech devices are presented to patients; and the system design, including its software, hardware and layout.

If the in-operatory computer is to be viewed positively by the patient, it should be perceived as improving the quality of care, or as being a partner to the dentist. In effect, there should be a dynamic, triad relationship between the dentist, patient and computer, where the computer is the knowledgeable servant of the dentist, and enhances the patients' confidence in the quality of care they are receiving.

With proper input devices, the dentist can streamline data collection during the examination process and, in the eyes of the patient, will appear to use the computer only as a decision-making aid. In addition, either the dentist or another staff member can use the com-

puter's educational graphics to enhance the patient's understanding and appreciation of the suggested treatment, thereby encouraging better case acceptance. Using this approach, the patient will remain the focus of the dentist's attention as opposed to the computer.

Clinical Computer Applications

We are just beginning to see the birth of electronic clinical records programs that match the efficiency and accuracy of current patient billing and accounting records programs. The new programs offer a number of advantages to the dentist, notably in terms of the time and space required to manage patient records. These obvious benefits will be matched by the automated communications the programs will offer to the patient, other members of the dental/medical treatment team and the patients' insurers.

Imagine 2,000 or 20,000 patient records being stored in a space no larger than a brief case. Imagine creating a treatment plan for a patient and, one minute later, handing the patient a copy of the plan complete with itemized fees and a detailed layman's description of all of the procedures you wish to perform for them.

With the inclusion of knowledge bases in the software, clinical decision making can be structured so that the patient sees the computer as confirming or facilitating the dentist's decisions. Currently, there are programs available to assist the dentist with decisions related to adverse drug interactions and proper patient management with regard to key medical conditions. Programs to facilitate periodontal decision making and, particularly, individual tooth prognosis for patients with complex periodontal and prosthetic needs are now in the developmental stages. Also of clinical relevance are new graphic programs that allow both still and motion picture depictions of various clinical problems and solutions. These programs will be invaluable for both patient education and informed consent.

The most important feature of the new system designs, as compared with what was available in the past, is the development of software that allows dentists to "customize" individual application programs to suit their needs. Prior to the development of this software, dentists were often required to change their patterns of practice based on the capabilities and structure of the

programs they had on their office computer. Now, however, the new application programs can be made to function in much the same way as the dentist operating them is used to working. In addition, these programs can be upgraded to include new treatment modalities as they develop and are incorporated into the dentist's practice.

All health care professions are being challenged both publicly and politically to be more cost effective. The debate centres around two factors: fee versus quality. However, the proper use of well-designed computer applications can not only streamline patient care, it can also provide a basis for demonstrating the quality of care. This should assure patients of their basic right to continue to receive high-quality dental care at a fair cost.

In summary, the days when dentists were slaves to their office computer are gone. Today's systems should reverse these roles, making the computer the servant of the dentist, with patients being the ultimate beneficiaries.

Dr. Paul Rhodes maintains a private practice in Oakland California, specializing in reconstructive periodontics.

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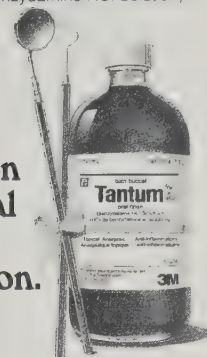
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Prescription relief of oral pain and inflammation.

Summary of prescribing information

THERAPEUTIC CLASSIFICATION
Topical Analgesic — Anti-Inflammatory

Action

Animal studies using the parenteral route have shown that "Tantum" Oral Rinse possesses properties of an analgesic—anti-inflammatory agent. This effect is not mediated through the pituitary-adrenal axis. Studies using the topical route have demonstrated the local anesthetic properties of benzydamine hydrochloride. In controlled studies in humans with oropharyngeal mucositis due to radiation therapy, "Tantum" Oral Rinse provides relief through reduction of pain and edema. Similar studies in patients with acute sore throat demonstrated relief from pain.

Indications

"Tantum" Oral Rinse is indicated for relief of pain in acute sore throat and for the symptomatic relief of oro-pharyngeal mucositis caused by radiation therapy.

Contraindications

"Tantum" Oral Rinse is contraindicated in subjects with a history of hypersensitivity to any of its components.

Precautions

The use of undiluted "Tantum" Oral Rinse may produce local irritation manifested by burning sensation in patients with mucosal defects. If necessary, it may be diluted (1:1) with lukewarm water. Since "Tantum" Oral Rinse is absorbed from the oral mucosa and excreted mostly unchanged in the urine, a possibility of its systemic action has to be considered in patients with renal impairment.

Use In Pregnancy

The safety of benzydamine HCl has not been established in pregnant patients. Risk to benefit ratio should be established if "Tantum" is to be used in these patients.

Use in Children

Safety and dose directions have not been established for children five years of age and younger.

Adverse Reactions

The most frequent adverse reactions reported are: local numbness (9.7%), local burning or stinging sensation (8.2%), nausea and/or vomiting (2.1%). The least frequent were reports of throat irritation, cough, dryness of the mouth associated with thirst, drowsiness and headache.

Treatment of Overdosage

There are no known cases of overdosage with benzydamine HCl gargle. Since no specific antidote for benzydamine is available, cases of excessive ingestion of the liquid should receive supportive symptomatic treatment aimed at rapid elimination of the drug.

Dosage and Administration

Acute sore throat: Gargle with 15 mL every 1 1/2 to 3 hours keeping in contact with the inflamed mucosa for at least 30 seconds. Expel from the mouth after use.

Radiation Mucositis: Use 15 mL as a gargle or rinse repeated 3-4 times a day, keeping in contact with the inflamed mucosa for at least 30 seconds and then expel from the mouth. Begin "Tantum" Oral Rinse the day prior to initial radiation therapy; continue daily during the treatment and after cessation of radiation until the desired improvement is obtained.

Availability

Tantum Oral Rinse is available in 100 and 250 mL bottles. "Tantum" Oral Rinse is a clear yellow-green liquid containing 0.15% benzydamine hydrochloride in a pleasant-tasting aqueous vehicle with 10% ethanol.

Product monograph is available on request.

References:

1. Simard-Savoie S and Forest D. *Curr Ther Res* 1978; 23(6):734-45.
2. Whiteside MW. *Curr Med Res Opin* 1982;8:188-9
3. Wethington JF. *Clin Ther* 1985;7(5):641-6
4. Product monograph
5. Yankell SL. Evaluation of benzydamine HCl in patients with aphthous ulcers. *The Compendium of Continuing Education* 1981; 11(1).
6. Epstein JB. *Int J Radiation Oncology Biol Phys* 1989; 16(6):1571-5.

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By class, Toradol belongs to the non-steroidal anti-inflammatory drug (NSAID) family. However, unlike conventional NSAIDs, it is a potent analgesic agent with minimal anti-inflammatory and antipyretic activity. And, it's the first peripherally-acting analgesic to be available in both IM injection and tablet formulations.^{1,2}

One Toradol 30 mg IM injection has been proven to be as effective as morphine 12 mg IM and meperidine 100 mg IM.³⁻⁹ And clinical studies have shown that one Toradol 10 mg tablet is more effective than acetaminophen 600 mg + codeine 60 mg (i.e., two tablets of acetaminophen + codeine #3).¹⁰⁻¹²

But, because Toradol is non-narcotic,¹ it has a more favourable tolerability profile than morphine, meperidine and acetaminophen-codeine combinations with less nausea, vomiting, drowsiness^{10,11,13} and constipation.¹ What's more, Toradol has no narcotic addiction or abuse potential.¹⁴

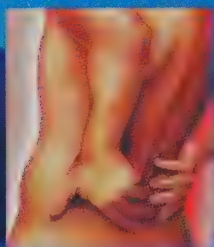
Since Toradol is not a controlled substance,² there's no need to worry about narcotic control or security procedures. As well, Toradol has no narcotic prescribing restrictions.

So, for the management of acute, mild to severe pain in your practice, think about Toradol IM and tablets. Narcotic efficacy without narcotic drawbacks.

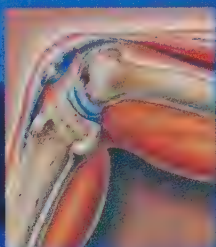
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Snapshot of a President

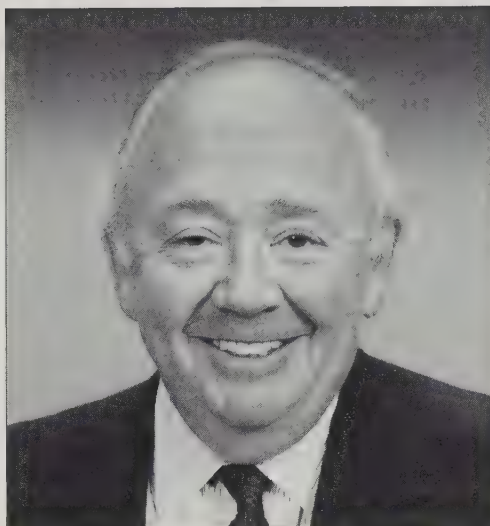
Dr. Rod Moran, formerly the treasurer of Canadian Dental Service Plans Inc. (CDSPI)'s management committee, assumed his elected position as president of the corporation January 1. He succeeded Dr. Mel Charendoff, who announced his retirement last year.

A member of CDSPI's management committee since 1973, Dr. Moran is a University of Toronto graduate with a specialty in pedodontics. Currently the dental director of the Hugh MacMillan Medical Centre in Toronto, he is renowned for his outstanding work in developing dental techniques and therapies for children with congenital deformities. These achievements were recognized by Ontario in 1990, when Dr. Moran was awarded the Order of Ontario, the province's highest honor.

Dr. Moran has a proven record of service to the dental profession, and is a past president of both the Ontario and the Canadian dental associations. His ongoing commitment to dentistry is evident in the goals he has set for himself in his new role as CDSPI President.

"There are many things that I want to accomplish over the term of my presidency," said Dr. Moran. "My immediate goal is to conduct a complete review of the Canadian Dentists' Insurance Program (CDIP). CDSPI has already begun a close review of each plan, on behalf of CDA, to ensure that the plans are still competitive and still satisfy the needs of the dental profession. We are aggressively moving to rebuild in order to reposition ourselves in the '90s, so that we can continue to offer the same advantages to the dentists of Canada that we have always offered.

"Steadily improving the quality of services to our members remains a top priority, and on that front we're making remarkable progress. For example, we secured from our insurers a guarantee that 1992 rates will remain in effect for 1993. As well, the plan changes we introduced last year and additional enhancements that are effective this year illustrate that we are committed to improving things for the dental profession. We expanded our staff in the insurance services area, extended our hours of business for participants in the Western



Dr. Rod Moran

provinces, and introduced InstApply, a new service which makes the insurance application process quicker and easier for you.

"Our renewed emphasis on customer service is reflected in the formation of a Customer Service Action Team which, among other missions, will provide ongoing training for CDSPI employees to ensure that everyone in the organization is aware and knowledgeable of all products and services. We will also conduct surveys and focus groups to get input from the dental profession. Beyond delivery, knowing which services our present and future members want and need will be an ongoing challenge during my presidency.

"In 1992, CDIP expanded to include 14 plans and the CDA RSP grew to 4,000 participants with investments close to \$170 million. We made changes to CDIP that dentists across the country asked for. And now, a recent survey of our CDA RSP participants indicates that 80 per cent would like to invest in Registered Retirement Income Funds (RRIFs). Whenever we consider expanding a product range, our motto is that we must be able to do it better, at a better price and with better service than our competitors.

"During my term, I will be attending provincial association and society meetings across the country and carefully listening to the wishes and ideas of our dentist participants. I want to hear from all of you, so you should approach me at

these events and tell me what you like and don't like. After all, this is your organization. As well as talking to you in person, I will have a regular column here in the *CDA Journal*. Please write to me and let me know your questions, comments and suggestions so that I can address them in future columns.

"Only with your continued support and input has CDIP been able to weather many storms and consistently emerge on top. Already I have seen that loyalty to CDIP is tangible, since more than half of all participants have been with us for at least 15 years. I also encourage you to support your professional associations, since the benefits of CDIP and the CDA RSP are only available to members of the CDA and the cosponsoring provincial dental associations.

"I see CDSPI's role as being the pre-eminent service organization for dental professionals. Our aim is to provide a human face which members of the profession can relate to. My objective is to bring CDSPI closer to the "grass roots" of the profession, and foster a better understanding of CDSPI and the services it offers."



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THERAPEUTIC CLASSIFICATION

Analgesic Agent

ACTION

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug that exhibits analgesic activity. Its mode of action is to inhibit the cyclo-oxygenase enzyme system, thereby inhibiting the synthesis of prostaglandins, and is considered to be a peripherally acting analgesic. At analgesic doses it has minimal anti-inflammatory and antipyretic activity. Ketorolac tromethamine is rapidly and completely absorbed when administered by both the oral and intramuscular routes, and pharmacokinetics are linear following single and multiple dosing.

Steady state plasma levels are attained after one day of Q.I.D. dosing. Based only on pharmacokinetic principles, a faster attainment of the steady state plasma level might be achieved with a loading dose of about twice the maintenance dose. This occurs when the dosing interval is approximately equal to the drug's half-life.

Following oral administration, peak plasma concentrations of 0.52 to 1.31 mcg/ml occurred 35 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 4.1 and 6.1 hours in healthy adults, while in elderly subjects (mean age: 72 years) it ranged between 3.0 and 6.1 hours. A high fat diet decreased the rate but not the extent of absorption of oral ketorolac tromethamine, while antacid had no effect.

Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 mcg/ml occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.8 and 6.3 hours in young adults and between 4.4 and 8.6 hours in elderly subjects (mean age: 72).

The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) and the remainder is excreted in the feces.

More than 99% of the ketorolac in plasma is protein bound over a wide concentration range.

INDICATIONS

Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopedic and gynecological operative procedures.

CONTRAINDICATIONS

Toradol (ketorolac tromethamine) should not be used where there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, ketorolac tromethamine should not be used in patients in whom acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory agents induce acute asthmatic attacks, urticaria, rhinitis or other allergic manifestations. Fatal anaphylactoid reactions may occur in such individuals.

Toradol (ketorolac tromethamine) also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system.

WARNINGS

Long-term administration of ketorolac tromethamine oral formulation has shown that this drug shares the risks that other non-steroidal anti-inflammatory drugs pose to patients when taken chronically. Peptic ulceration, perforation and gastrointestinal bleeding, sometimes severe and occasionally fatal have been reported during therapy with non-steroidal anti-inflammatory drugs and may occur with ketorolac tromethamine, both in the presence or absence of previous symptoms. Elderly and debilitated individuals are most susceptible to these complications, the incidence of which increases with dose and duration of treatment. Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases the physician must weigh the benefits of treatment against the possible hazards.

Patients taking any non-steroidal anti-inflammatory drug including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted and the patient closely monitored.

Ketorolac tromethamine is not recommended for routine use with other non-steroidal anti-inflammatory drugs because of the potential for additive side effects.

Use in pregnancy, lactation and labour: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation.

Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of non-steroidal anti-inflammatory drugs on uterine contraction and fetal circulation.

Use in children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the renal effects of non-steroidal anti-inflammatory drugs, extra caution and the lowest effective dose should be used.

PRECAUTIONS

Renal effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with ketorolac tromethamine. Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, patients with significant impairment of renal function (serum creatinine values greater than 5 mg/dL) should not receive ketorolac tromethamine unless the expected benefits outweigh the risks. In patients with moderately impaired renal function serum creatinine values ranging from 1.9 to 5.0 mg/dL, the rate of ketorolac clearance was reduced to approximately half of normal. The total daily dose of ketorolac tromethamine should be reduced by half in such patients. The disposition of ketorolac in dialysis patients has not been studied.

Patients who are volume depleted because of blood loss or severe dehydration may be dependent on renal prostaglandin production to maintain renal perfusion and therefore glomerular filtration rate. In such situations the use of drugs which inhibit prostaglandin synthesis might be expected to further decrease renal blood flow. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until the patient is normovolemic.

Hepatic effects: Meaningful elevations (greater than 3 times normal) of serum transaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxalacetic (SGOT or AST)) occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and electrolyte balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other non-steroidal anti-inflammatory drugs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be borne in mind. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions predisposing to fluid retention.

Hematologic effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Patients who have coagulation disorders or are receiving drug therapy that interferes with hemostasis should be carefully observed when ketorolac tromethamine is administered. Unlike the prolonged effects from aspirin, the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued.

Blood dyscrasias associated with the use of non-steroidal anti-inflammatory drugs are rare, but could occur with severe consequences.

Infection: In common with other anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

Drug Interactions: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration.

Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine.

Ketorolac tromethamine does not alter digoxin protein binding.

In vitro studies indicated that at therapeutic concentrations of salicylates (300 mcg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5%. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, tolbutamide and piroxicam did not alter ketorolac tromethamine protein binding. Since ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly.

There is no evidence in animal or human studies that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Ketorolac tromethamine mildly reduces the diuretic response to furosemide in normovolemic subjects. Inhibition of renal lithium clearance leading to an increase in plasma lithium concentration and potential lithium toxicity has been reported with some non-steroidal anti-inflammatory drugs. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Concomitant administration of methotrexate and some non-steroidal anti-inflammatory drugs have been reported to reduce the clearance of methotrexate, enhancing the toxicity of methotrexate. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

There is limited experience on concurrent administration with morphine. Available information shows no evidence of adverse interactions. The extent of a possible narcotic-sparing effect of ketorolac tromethamine is currently under investigation.

ADVERSE EFFECTS

Toradol tablets: The incidence of adverse reactions in approximately 600 patients and subjects receiving short-term oral therapy (less than 2 weeks) with Toradol (ketorolac tromethamine) are listed below. The most common adverse effects include: Gastrointestinal: dyspepsia (2%), gastrointestinal pain (2%), nausea (2%). Central nervous system: headache (2%), dizziness (2%).

The following adverse events are rare but have been reported (less than 1%): Gastrointestinal: flatulence, gastritis. Respiratory: dyspnea. Dermatologic: urticaria, rash, pruritus. Metabolism/nutritional: edema. Body as a whole: asthenia. Hemic and lymphatic: purpura. Musculoskeletal: myalgia.

Toradol IM: The adverse reactions listed below were reported to be probably related to Toradol IM in clinical trials in which patients received up to 20 doses of 30 mg of intramuscularly administered Toradol over a period of up to five days.

Incidence between 3 and 9%: Gastrointestinal: nausea, dyspepsia, gastrointestinal pain. Central nervous system: drowsiness. Incidence between 1 and 3%: Gastrointestinal: diarrhea. Central nervous system: dizziness, headache, sweating. Body as a whole: edema. Injection site pain was reported by 2% of patients in multi-dose studies (vs. 5% for morphine control group). Incidence 1% or less: Gastrointestinal: constipation, flatulence, gastrointestinal fullness, liver function abnormalities, melena, peptic ulcer, rectal bleeding, stomatitis, vomiting. Body as a whole: asthenia, myalgia. Cardiovascular: vasodilatation, pallor. Hemic and lymphatic: purpura. Nervous system: dry mouth, nervousness, paresthesia, abnormal thinking, depression, euphoria, excessive thirst, inability to concentrate, insomnia, stimulation, vertigo. Respiratory: dyspnea, asthma. Urogenital: increased urinary frequency, oliguria. Dermatologic: pruritus, urticaria. Special senses: abnormal taste, abnormal vision.

OVERDOSAGE

The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused abdominal pain and peptic ulcers which recovered after discontinuation of dosing.

DOSAGE AND ADMINISTRATION

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient.

Oral: The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended.

Toradol is recommended for short-term use only i.e. for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. A lower initial dose may be suitable for patients under 50 kg in body weight, over age 65 years and/or with less severe pain at baseline. In the initial post-operative period, more frequent dosing (e.g., every 2 hours) may be employed, but the total daily dose should not exceed 120 mg. Dose above 120 mg could cause drug toxicity (see Warnings & Precautions). If supplemental analgesia is required, a concomitant low dose of opiate can be used.

The administration of continuous multiple daily doses of Toradol IM should not exceed 5 days for injection dosing. There has been limited experience with dosing for more than 5 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time.

Directions for use: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal (you will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly.

CONVERSION FROM PARENTERAL TO ORAL THERAPY

Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. In the latter case, the total combined daily dose of ketorolac should not exceed 120 mg on the day the change of formulation is made, this includes a maximum of 4 of the 10 mg tablets.

Toradol (ketorolac tromethamine) is a Schedule F drug.

COMPOSITION

Toradol Tablets: Each Toradol tablet contains ketorolac tromethamine, the active ingredient, with microcrystalline cellulose, lactose and magnesium stearate. The coating suspension contains hydroxy-propyl-methylcellulose, titanium dioxide and polyethylene glycol.

Toradol IM: Toradol IM is available for intramuscular administration as: 15 mg in 1 mL (1.5%), or 30 mg in 1 mL (3%) of ketorolac tromethamine in sterile solution. The 15 mg/mL solution contains 10% (w/v) alcohol, USP, and 6.68 mg sodium chloride in sterile water. The 30 mg/mL solution contains 10% (w/v) alcohol, USP and 4.35 mg sodium chloride in sterile water. The pH is adjusted with sodium hydroxide or hydrochloric acid. The sterile solutions are clear and slightly yellow in colour.

STABILITY AND STORAGE RECOMMENDATIONS

Toradol Tablets: Store at room temperature. The blister package tablets should be protected from light.

Toradol IM: Store at room temperature with protection from light.

AVAILABILITY OF DOSAGE FORMS

Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets with one side printed in red with TORADOL inside a bold 1 and the other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL syringes containing 15 or 30 mg/mL of ketorolac tromethamine.

Product Monograph available on request.

REFERENCES

1. TORADOL Product Monograph, Syntex Inc., Feb. 1991. **2.** Compendium of Pharmaceuticals and Specialties, 26th Edition, 1991. **3.** Yee JP et al. *Pharmacotherapy* 1986; 6(5):253-61. **4.** Brown CR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):45S-49S. **5.** O'Hara DA et al. *Clin Pharm Ther* 1987; 41(5):556-61. **6.** Fragen RJ. Data on File, Syntex Inc., Document CL3837, 1987. **7.** Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. **8.** Stanski DR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):40S-44S. **9.** Data on File, Syntex Inc., Document #90027-1, 1989. **10.** Forbes JA et al. *Pharmacotherapy* 1990; 10(6 Pt 2): 77S-93S. **11.** Forbes JA et al. *Pharmacotherapy* 1990; 10(6 Pt 2): 94S-105S. **12.** Mehlich D et al., Data on File, Syntex Inc., Document CL3686. **13.** Data on File, Syntex Inc., Document #90027-3, 1989. **14.** Rooks II WH et al. *Pharmacotherapy* 1990; 10(6 Pt 2): 30S-32S. **15.** Mangioni C et al. Data on File, Syntex Inc., Document CL4899, 1989. **16.** Huttman W et al. Data on File, Syntex Inc., Document CL4882, 1989. **17.** Nedelman P et al. Data on File, Syntex Inc., Document CL3635, 1986. **18.** Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989. **19.** Diebschlag W, Nocker W, Data on File, Syntex Inc., Document CL5468, 1989. **20.** Molinie J et al. Data on File, Syntex Inc., Document CL4624, 1988. **21.** Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. **22.** Bloomfield S et al. Data on File, Syntex Inc., Document CL3658, 1986. **23.** Sunshine A. Data on File, Syntex Inc., Document CL3674, 1986.

Toll-free Toradol Information Hotline: 1-800-561-5481.



Syntex Inc.* Mississauga, Ont./Montréal (Qué.)
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The Upjohn Company of Canada
 Don Mills, Ontario

CDA Annual Dental Meeting • Toronto 1993

April 28 - May 1

ANNUAL DENTAL MEETING UPDATE

“Exhibit-mania” at the Metro Toronto Convention Centre!



Exhibits galore – that’s what will be waiting for you at this year’s CDA Annual Dental Meeting being held in Toronto, April 28 to May 1. Both CDA and ODA exhibitors have answered our call: the 1993 Exhibit Hall is filled to capacity ... and still growing! More than 150 dental suppliers will be on hand to serve you and bring you up-to-date on the latest in dental technology.

This year’s convention theme “active learning – active living” is especially appropriate for the Exhibit Hall. You will “actively learn” about new products by handling them on the spot – without any obligation to buy – and exchanging information with experienced company representatives. At the same time, you will be “actively living” by strolling comfortably down the aisles dressed in your favourite casual clothes ... jogging suits, T-shirts, jeans, sneakers, whatever. No aching feet or tight clothes for anyone! All delegates and exhibitors will be encouraged to dress casual during the four-day convention

April is the ideal month to do a little bit of ... spring cleaning! By sorting out your dental supplies before the convention, you will be able to take advantage of the many special offers that the 1993 exhibitors are concocting just for you. Don’t miss this fantastic

opportunity to meet your numerous suppliers face-to-face and do some “active shopping”, without taking any time away from your patients. Exhibits will be open from Thursday, April 29th at 9:00 a.m. until Saturday, May 1st at 1:00 p.m. ... long enough for you to visit the Exhibition!

The 1993 Organizing Committee has some surprises in store for you! With the assistance of the two representatives of the Dental Industry Association of Canada, Ms. Eva Young and Mr. Ken Croney, we are devising ways to create an Exhibit Hall environment that will delight all attendees. In addition, for some delegates, lunch in the Exhibit Hall will be complimentary: details ... and menus to be posted on site! Last of all, in keeping with our “active living” theme, we will once again be giving away a superb Jeep for the Super Draw in the Exhibit Hall, compliments of Aurum Ceramic/Classic

The 1993 CDA dental exhibition will be the largest ever held in Canada. You absolutely cannot afford to miss it. Plan to attend. To register for the meeting, simply complete the registration form in this issue and mail it to CDA Conventions or fax it to (613) 523-3062.

David Brown, D.D.S.

Chairperson, Exhibits

Table Clinics ... Knowledge in a Nutshell



The 1993 CDA Annual Dental Meeting is already setting records! An extraordinary number of applications to present table clinics has flooded in from all parts of the country and the Organizing Committee members are confident that this program will be one of the highlights of the meeting.

Table clinics have always been popular with CDA delegates. These demonstrations are unique in that techniques or find-

ings are presented within a 15-minute time frame. Each participating clinician is given a table in the space allotted for table clinics. The information can be displayed on a poster or projected on a small screen and the clinician is always on hand to answer questions. Each presentation is repeated consecutively throughout the morning or afternoon and it is therefore impossible for you to “miss” one.

This year, due to the great number and variety of applications received, table clinics will be spread over a 2 day period and will be held in the Exhibit Hall, near the restaurant area. Dentists, dental hygienists, dental assistants, students and exhibitor representatives will not only present scientific material but also information relating to new products and new techniques. The program will be changed every day, so it may well be worth your while to stroll through this area on a daily basis ... you may discover a few “tricks” that will change your practice!

Ted Harper, D.D.S.

Chairperson, Table Clinics

CDA Annual Dental Meeting – Toronto 1993

Limited Attendance Courses – Wednesday, April 28th

Wednesday, April 28

TERRY DONOVAN, D.D.S.

Los Angeles, California

“Update on Aesthetic Restorative Dentistry”

The contemporary restorative dentist has a host of options with which to help his or her patients. Many of these options are considerably less invasive than many of our conventional restorative therapies. Many patients present for aesthetic restorative treatment, and are becoming increasingly sophisticated in their expectations of the final results. Additionally, manufacturers bring a myriad of new products to the market, often accompanied by a blizzard of information purported to demonstrate the benefits and efficacy of these new products.

This presentation will delineate the procedures essential for success with conventional and contemporary adhesive restorative dentistry. An objective comparative evaluation of many of the newer products on the market will also be given, with an emphasis placed on clinical manipulation of these products.

Topics to be covered will include:

- Essentials for soft tissue aesthetics on fixed prosthodontics.
- Effective gingival displacement.
- New materials and techniques for fabrication of provisional restorations.
- Review of impression materials.
- New techniques with impression materials.
- Solutions for fractured porcelain.
- Metal bonding – mystery & myth.
- Current thoughts on bonding to tooth structure – enamel bonding, dentin bonding.
- Conservative aesthetic techniques: bleaching, enamel microabrasion.
- Bonded porcelain: veneers, crowns, inlays, onlays, use of bonded porcelain in full mouth rehabilitation.
- Essentials for success in fixed prosthodontics.
- Other current topics.

About the clinician:

Terry Donovan received his D.D.S from the University of Alberta in 1967, and practiced full time in Regina, Saskatchewan for 13 years. He received his Certificate in Advanced Prosthodontics from the University of Southern California in 1981. He is currently Chairman of the American Dental Association's Council on Dental Materials, Instruments and Equipment.

Wednesday, April 28 and

Thursday, April 29 (a.m. only)

TORSTEN JEMT, D.D.S., Ph.D.

Göteborg, Sweden

“Recent prosthetic advances in osseointegration ad modum Branemark” HANDS-ON COURSE

For those not certified in the Branemark system, this is a certification course. This course is designed to give prosthodontists and general practitioners knowledge about the prosthetic procedures of the Branemark System.

Topics to be addressed will include:

- Introduction and review of clinical and physiological problems associated with edentulism and partial edentulism.
- Review of the scientific background of the Branemark system including biological considerations, biomechanical aspects and technical engineering aspects.
- Brief overview of surgical procedures and presentation of surgical aspects of significance for prosthetic rehabilitation.
- Prosthetic treatment planning, patient selection, indications and contraindications.
- A detailed presentation of prosthetic, clinical and technical aspects covering various techniques and the use of different materials.
- Hands-on training that includes presentation of components, instruments and the different steps involved in the clinical treatment sequence.
- Discussion of possible complications and how to handle them.
- Discussion of patient control and maintenance program including radiographical technique and computer possibilities in long term patient follow-up.

About the clinician:

Dr. Jemt obtained his D.D.S. in 1975 and specialized in prosthodontics in 1982. His Ph.D. thesis was defended at the University of Göteborg in 1984. In 1988 he was made Associate Professor in Prosthodontics. Since 1986 he has been Associate Head of the Branemark Clinic. Dr. Jemt has presented more than 100 lectures to professional audiences and is the author of over 30 scientific publications. He is currently involved in research on single tooth replacements.

CDA Annual Dental Meeting – Toronto 1993

Limited Attendance Courses – Wednesday, April 28th

Wednesday, April 28

JEFF MILLER &
CHARLOTTE PEER MILLER

London, Ontario

“Enhancing the Career of Dental Reception”

As a result of an extensive needs assessment conducted recently by the Ontario Dental Nurses & Assistants Association, the 1993 CDA Annual Convention will include, on its agenda, a special limited attendance program for dental receptionists. The course is part of the ODN & AA's Network for Career Enhancement program and was created specifically for career dental receptionists to recognize the vital role they play in the delivery of dental health care services.

Using adult education techniques, Jeff Miller and Charlotte Peer Miller will use facilitation techniques to build on prior learning. Together, the participants will share experiences, explore and develop new skills, knowledge and attitudes in their chosen vocation, dental reception.

Topics to be included: communications, recall systems, accounts receivable management/collections, telephone technique, marketing, team and self-development and much more.

This program is designed specifically for continuing education and networking for Canada's dental receptionists.

About the clinicians:

Charlotte Peer Miller is the founding chair of the Committee of the Ontario Certified Dental Receptionists and a co-designer of the Network for Career Enhancement program. As an experienced Certified Dental Assistant and Certified Dental Receptionist, Charlotte is committed to the personal and professional development of the entire dental health care team. Ms. Peer Miller is also a Past President of the ODN & AA.

Jeffrey Miller, as Executive Director, has directed the growth and success of the Ontario Dental Nurses & Assistants Association for the past eight years. His many academic achievements include undergraduate and graduate studies in Science, Business Administration, Marketing, Accounting, Strategic Planning/Management, Communications and Adult Education. Jeffrey is dedicated to bridging the skill gap and facilitates long-range professional development of skills, knowledge and attitude and believes that most people have only scratched the surface of their true potential.

Wednesday, April 28

BURTON PRESS, D.D.S.

Alamo, California

“Secrets of Practice Success”

This presentation is a must for the entire team! Join Burt Press, dentistry's greatest motivator for a revealing look at what makes the winning practices tick. Decide today to take charge of your future – to experience the professional reward you deserve.

How will you ***position*** your practice for tomorrow? What are the verbal and non-verbal techniques of ***communicating for success***? Learn how to ethically promote referrals and build upon recalls. How can the ***winning team*** multiply your efforts?

In today's competitive environment, the ***new patient experience*** is critical in gaining acceptance for total treatment. You'll learn the exact details, and why success is as simple as 1, 2, 3. Focus on a daily technique which increases gross 10% without additional patients. Critically evaluate the profitability of your approach to soft tissue management. You'll be challenged and entertained. You won't fall asleep. You may never be the same!

About the clinician:

Dr. Burton H. Press, Past President of the American Dental Association, is a recognized authority on the management and marketing of dental practices. Dr. Press spent 26 years as the senior member of a California group dental practice before becoming Assistant Dean at the University of the Pacific School of Dentistry, where he is currently adjunct professor. A Fellow of the American and International Colleges of Dentists, Dr. Press is the recipient of an honorary doctorate from Georgetown University and a director of the American Academy of Dental Practice Administration. Thousands of dentists were avid readers of his monthly newsletter, *The Press Report*.

CDA Annual Dental Meeting – Toronto 1993

Limited Attendance Courses – Saturday, May 1st

Saturday, May 1

DONALD YU, B.S., D.M.D., M.Sc.D.
Edmonton, Alberta

“Predictably Successful Endodontics in the '90s” HANDS-ON COURSE

On Friday, April 30th there will be a two-part lecture series to complement this Hands-on Program. The lectures will be open to all delegates registered for the convention.

The high demand by an informed public for endodontic services demonstrates that general practitioners must be abreast of proven predictably successful endodontic techniques. The rationale and therapeutic end-point of endodontic therapy in relationship with clinical cases will be clarified in social, philosophical and biological viewpoints. This hands-on presentation will enable participants to find, feel, clean and shape the root canal system using the passive envelope of motion of the files and reamers. Participants will experience the proficiency of hermetic obturating with warm gutta-percha in conjunction with sealer into all the portals of exit of the root canal system.

Topics will include:

- Hands-on Schilder's technique on mounted extracted anterior and posterior teeth

- Review of anterior tooth
 - access opening
 - cleaning & shaping
 - packing with warm gutta-percha
- Demonstration on anterior tooth
- Cases review & critique
- Questions & Answers

About the clinician:

Donald Yu is a member of the Canadian Dental Association, Canadian Academy of Endodontics, Royal College of Dentists in Canada, American Association of Endodontists, Alberta Dental Association, Alberta Society of Endodontists, Edmonton and District Dental Society, Edmonton Multidisciplinary Dental Study Club. He is a Fellow of the Academy of General Dentistry and the Academy of Dentistry International. He received his D.M.D. from the University of Pennsylvania and holds a certificate of Advanced Graduate Study in Endodontics, Master of Dental Science in Endodontics from Boston University. He has taught at the University of Alberta and is currently a visiting faculty member of Boston University. He practices full-time endodontics with his two brothers in their Edmonton Endo-Perio office.

The following clinicians will be assisting Dr. Yu during the full-day hands-on program: Dr. Henry Yu, Dr. Jeffrey Grossman, Dr. Zareh Onzounian, Dr. Eric Kwan and Dr. Edwin Levy.

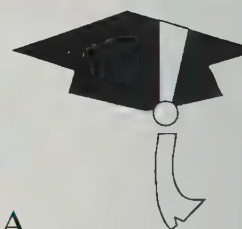
WIN A JEEP!



You could drive home from the 1993 CDA Annual Dental Meeting in a brand-new vehicle. **Aurum Ceramic/Classic**, sponsor of the CDA Annual Dental Meeting has once again graciously provided the grand prize for Exhibit Hall attendants.

Each day you visit the 1993 Exhibit Hall, your chances of winning will increase.

CLASS REUNIONS



The 1993 CDA
Annual Dental Meeting
is the perfect time to renew
old acquaintances.

Many dental graduating classes take
this opportunity to renew old ties.

If you plan to organize
a class reunion,
call CDA Conventions
at 1-800-267-6354
and our staff will be happy
to arrange function rooms and
bedrooms for your group.

CDA Annual Dental Meeting – Toronto 1993

Social Program Highlights

THURSDAY, APRIL 29 • 5:00 - 7:00 p.m. /

Metro Toronto Convention Centre – Constitution Hall

Ash Temple and CDA Conventions presents ...

The 1993 Opening Ceremony

featuring



Canadian Children's
Opera Chorus



AND

*The Caribbana
Dance Troupe*

All convention delegates are invited to attend the Opening Ceremony. Tickets are available on request to registered delegates only – be sure to request your ticket when you register for the annual dental meeting, space is limited.

The Opening Ceremony will be followed by a

Fun Night

sponsored by the Ontario Dental Nurses and Assistants Association and Healthco.

An evening of fun, fantasy and illusion you have never seen before.

Delegates may purchase tickets to enjoy "An Evening at La Cage" and a light meal. The Meal will be served in the Reception Hall between 7 and 8 p.m. and the Evening with La Cage performance will be held in Constitution Hall at the Metro Toronto Convention Centre after dinner. This Las Vegas style revue is a dazzling diamond ... you'll share a spectacular all-star cast with high-powered routines and amazing impersonations. You'll see everyone from Michael Jackson and Liza Minelli to Elvis Presley and Diana Ross ... or at least you'll think you're seeing them.

All convention delegates will receive complimentary tickets to attend the 'Party Lights' Dance that will be held at the Metro Toronto Convention Centre. Cash bar, good music and plenty of fun – plan to attend! The dance is scheduled to begin at 9 p.m. (after La Cage).

FRIDAY APRIL 30 • 7:00 p.m. - 1:00 a.m. / L'Hotel

Get ready for a cultural extravaganza at the

President's Gala - A Cavalcade of Cultures

Ethnic buffet and dancing to the music of Doug Zimmerman and his Orchestra.

CDA Annual Dental Meeting • Toronto 1993

Summary of Scientific Sessions

Active Learning - Active Living

	L'Hôtel				Metro Toronto Convention Centre			
	Ballroom A	Ballroom B	Ontario Rm.	Niagara Rm.	Rm. 201 A-D	Rm. 201 E-F	Rm. 202 A-B	Rm. 202 C-D
WEDNESDAY, APRIL 28	Practice Management BURTON PRESS	Restorative Dentistry TERRY DONOVAN	Skills for Reception JEFF MILLER CHARLOTTE PEER MILLER	Implants TORSTEN JEMT (Sponsored by Nobelpharma)				
— LIMITED ATTENDANCE COURSES —								
A.M.	Endodontics STEPHEN BUCHANAN	Univ. of Western Ontario & The Cdn. Academy of Oral Medicine T. DALEY & G. McCARTHY	Stress and Burnout CHRIS CHRISTIAN- SON (Sponsored by the ODA's Dentists at Risk Committee)	Implants Hands-on TORSTEN JEMT (Sponsored by Nobelpharma)	MINI CLINICS	Implant Maintenance / Periodontal Diagnostics SALME LAVIGNE	Anesthesia (local and electronic) STANLEY MALAMED (Sponsored by H-Wave)	GRIEVE MEMORIAL LECTURE
THURSDAY, APRIL 29		CFDE Lecture FIONA McCALL & PAUL HOWARD			MINI CLINICS			Preventive Dentistry ERNEST NEWBRUN
P.M.								
A.M.	Practice Management ANITA JUPP	Endodontics (Lecture) DONALD YU (Sponsored by Kerr Canada)	Paediatric Dentistry PETER JUDD DOUGLAS JOHNSTON DAVID KENNY REBECCA YA-COBI (Sponsored by Toronto's Hospital for Sick Children)	CDA RSP/CDIP C. GALLANT C. HARRIS J. LAMANTIA (Sponsored by CDSPI)	MINI CLINICS	Periodontal Diseases University of Toronto E. FREEMAN P. BIREK J. SODEK D. LEVY M. PHAROAH J. SYMINGTON P.A. WATSON	Infection Control MILTON SCHAEFER	Preventive Dentistry ERNEST NEWBRUN
FRIDAY, APRIL 30					MINI CLINICS			Nutrition BARBIE CASSELMAN
P.M.								
A.M.	Financial Planning THOMAS OLSON (Sponsored by Aurum Ceramic/Classic)	Periodontics RICHARD WILSON	SPOUSES' PROGRAM Street Smarts	Endodontics Hands-on DONALD YU (Sponsored by Kerr Canada) Limited to 30 participants				
SATURDAY, MAY 1								
P.M.								

CDA Annual Dental Meeting • Toronto 1993

Summary of Scientific Sessions

Active Learning - Active Living

Metro Toronto Convention Centre								
	Rm. 203 A-B	Rm. 203 C-D	Rm. 205 A-B	Rm. 205 C-D	Rm. 206 A-B	Rm. 206 C-D	Rm. 206 E-F	Auditorium
WEDNESDAY, APRIL 28								
A.M.	New Technologies MARILYN MILLER & THOMAS TRUHE	Prosthodontics CLAUDE LAMARCHE (1/2 day French 1/2 day English)	Paedodontics MARVIN BERMAN	Dental Materials ALAN BOGHOSIAN	Geriatric Dentistry LINDA C. NIESSEN	Restorative Dentistry KARL LEINFELDER (Sponsored by Wright Dental)	Fluorides CHRISTOPHER CLARK (Sponsored by Procter & Gamble)	Practice Management WALTER HAILEY (Sponsored by Healthco D.D.L.)
THURSDAY, APRIL 29								
P.M.								
A.M.	Hygiene Department Development ANNETTE LINDER	Periodontics MARK SPATZNER (1/2 day French 1/2 day English)	Ortho-Paedodontics DAVID KENNEDY	Dental Materials JAMES SANDRIK	Geriatric Dentistry RON ETTINGER	Aesthetics ROSS NASH (Sponsored by Caulk Canada)	Periodontics JACK CATON	Wealth Accumulation TED LeVALLIANT (Sponsored by LeValliant)
FRIDAY, APRIL 30								
P.M.								
A.M.	Team Concept LORNA AKERVALL	TMJ GILLES LAVIGNE (1/2 day French 1/2 day English)	Nutrition BARBIE CASSELMAN	Prosthodontics BRIEN LANG	MINI CLINICS	Oral Medicine STUART FISCHMAN	Orthodontics / Paedodontics JACK DALE (Sponsored by the Canadian Association of Paediatric Dentistry)	
SATURDAY, MAY 1								
P.M.					MINI CLINICS			

CDA Annual Meeting – Toronto 1993

Highlights of the 1993 Annual Dental Meeting Program

THURSDAY, APRIL 29TH

PRACTICE MANAGEMENT

WALTER HAILEY, JR.
Los Angeles, California

Lecture sponsored by **Healthco D.D.L.**

AM Session: **The Missing Link in Dentistry (Part I)**

Have you ever considered that your excellent technical training comes into play only after the patient has said yes to treatment? Studies show that 85% of long term success in any field is due to the ability to effectively deal with people. This seminar will focus specifically on the foundational principles that make up that 85%. You will learn about the biggest personal barriers to case acceptance and how to overcome them. You will also learn about your patients buying strategy and the corresponding steps you can take to increase your case acceptance rate.

PM Session: **The Missing Link in Dentistry (Part II)**

You will learn a step by step process that you can use to increase patient satisfaction and case acceptance. How much do you know about your prospective patient? How much do they know about you? What is the key characteristic you must have to build long term success with your patients? What can you do to gain firm commitment from your patients to follow the treatment plan you have prescribed? What can you do to increase patient loyalty and referral business? The answers to all of these questions will give you an action plan to immediately implement for better results in your practice.

IMPACTED TEETH / HIV AND DENTISTRY

This program was jointly sponsored by
The University of Western Ontario and
The Canadian Academy of Oral Medicine

TOM DALEY, DDS
London, Ontario

8:30 - 9:40 AM: **Asymptomatic Impacted Teeth – The Extraction Issue from the Standpoint of Cystic or Neoplastic Potential of the Impacted Follicle**

Should asymptomatic impacted teeth, especially third molars, be extracted? This presentation briefly deals with a variety of pathological lesions, including obstructive odontogenic tumors and cysts, but concentrates on the dentigerous cyst and the hyperplastic dental follicle which are the most common non-inflammatory, non-resorptive lesions associated with impacted teeth. Should the risk of development of significant cystic or neoplastic change of the impacted follicle be a realistic consideration in the clinician's decision to extract or not?

GILLIAN M. MCCARTHY, BDS, MSc.
London, Ontario

9:50 - 11:00 AM: **Current issues in HIV and Dentistry**

This presentation will include the epidemiology of the AIDS epidemic, the pathogenesis of HIV disease and the importance of diagnosis of the oral manifestations of HIV disease. The concerns of dentists and the ethical and legal issues regarding provision of care for patients with HIV will be discussed.

ANESTHESIA

STANLEY MALAMED, DDS
Los Angeles, California

Lecture sponsored by **H-Wave Canada**

AM Session: **Electronic Dental Anesthesia**

Electronic dental anesthesia (EDA) was introduced in the United States in 1985. In a relatively short time this technique has received much publicity, both in the professional and lay press. Interest among dental patients and dental professionals has continued to grow.

In this program, Dr. Malamed will introduce this technique, reviewing its history, uses in medicine (TENS), and the results of research studies into EDA in various areas of dental practice. The technique of EDA for acute dental pain (e.g., restorative and periodontal procedures), postoperative pain control (e.g., post-surgery) and chronic pain (e.g., TMJ) management will be discussed and demonstrated via videotape.

PM Session: **Local Anesthesia Update**

Local anesthesia forms the backbone of pain control techniques in contemporary dental practice. The subject of pain control in dentistry has undergone a recent renewal of interest, a renaissance of sorts. In this program, Dr. Malamed will present an in-depth discussion of several aspects of this all important area of daily dental practice.

Subjects to be discussed include: the spectrum of local anesthetics available today, with an eye towards the appropriate selection of an agent for ultimate success and patient safety. Contraindications to local anesthetic administration will also be discussed.

The second area of discussion will be techniques of pain control. Maxillary nerve blocks will be reviewed briefly, however, the mandible will receive most of our attention, for it is here that most of us have occasional problems in achieving successful pain control. Dr. Malamed will troubleshoot mandibular anesthesia, reviewing the basic techniques and discussing a number of successful alternatives, such as the Gow-Gates mandibular block, Aknosi closed-mouth mandibular block, incisive nerve block and the PDL injection.

PROSTHODONTICS

CLAUDE LAMARCHE, DMD
Montreal, Quebec

AM Session: **Key to Success with Complete Removable Prosthodontics**

Conventional removable prosthodontics, even today, is often the only possible treatment for edentulous patients. For example, a particular medical condition can prevent any type of corrective surgery even considered elective. The cost of dental implants can also dissuade the patient from choosing this option. This presentation highlights all the elements believed essential for the success in complete removable prosthodontics:

- quality of the initial exam
- quality of the impression
- intermaxillary relationships
- angulation of posterior teeth in relation with the soft tissue to be covered
- modifications to be supplied to prosthesis after curing.

The pertinence of these factors will be illustrated with clinical situations and supported by the conclusions of two research projects.

CDA Annual Dental Meeting – Toronto 1993

Highlights of the 1993 Annual Dental Meeting Program

THURSDAY, APRIL 29TH

ORTHODONTICS

THE 1993 GRIEVE MEMORIAL LECTURE

Lecture sponsored by
The Canadian Association of Orthodontics

8:30 - 11:00 AM

FRIDAY, APRIL 30TH

PAEDIATRIC DENTISTRY

PETER JUDD, DDS, MSc.
DOUGLAS JOHNSTON, DDS
DAVID KENNY, DDS, PhD
REBECCA YACOBI, DDS, MSc.
Toronto, Ontario

Lecture sponsored by The Hospital
For Sick Children – Toronto

AM Session: Protocol-based Restorative and Pulp Treatment for the Primary Dentition

The practice of paediatric dentistry is going through rapid changes. Standards of practice and treatment philosophies at the Hospital for Sick Children (HSC) have been developed to meet these changes. Protocol-based restorative dentistry is one component of this development. It will be presented in a concise, step-by-step approach that can be immediately integrated into clinical practice. The aesthetic HSC resin short-post and crown for restoration of severely decayed anterior primary teeth will be illustrated. The pulp therapy component includes a critical review of aldehydes, the "Achilles heel" of dentistry, and challenges their continued use. The clinician will learn the non-aldehyde pulpectomy technique developed and taught at HSC. A combination of slides, computer-generated still videos and videotapes that will give the clinician a better understanding of "how to do it".

PM Session: Management of Children and their Parents in Emergent and Non-emergent Situations

Over 300 cases of dental trauma are treated at HSC annually. Two year-old children with dental trauma and anxious parents pose a challenge to all clinicians. At HSC protocols have been developed to facilitate successful management of dental trauma, children and their parents. These protocols are expeditious and effective and deal with all types of dental trauma seen in private practice. Protocols are applied to management of the child and parent(s) in non-emergent situations. The behavioural management component will examine societal trends, parent dentistry on a course of rapid change.

The dentist with a paediatric component to his/her practice needs to be aware of the current state of flux in paediatric practice. It is no longer acceptable to employ management techniques that focus only on completion of treatment, even it is emergency treatment. Treatment philosophies and technique will be presented that utilize the parent as a "partner" in providing treatment for the child. Much of this component will be taught using videotapes in a "post-game film analysis" approach of real incidences.

WEALTH ACCUMULATION

TED LEVALLIANT

Ottawa, Ontario

Lecture sponsored by
LeValliant Associates, Vista Financial,
Arthur Andersen, Standard Life,
Medi-Dent and Price Waterhouse

AM Session: Wealth Accumulation for Dentists

All too often Canadian dentists fail to generate substantial wealth from their excellent revenue stream. They lack a coherent, comprehensive approach to tax and financial planning and to the long term objective of building wealth.

LeValliant Associates recognizes the challenge and has assembled a prestigious national team of experts to offer a co-ordinated approach to wealth accumulation for Canadian dentists.

The LeValliant Associates team includes:

- Vista Financial (financial planning)
- Arthur Andersen & Co. (tax)
- Standard Life (tax sheltering / IPP's)
- Medi-Dent (leasing)
- Price Waterhouse (IPP's / pensions)

At this comprehensive session, experts in these fields will join Ted LeValliant to provide information on co-ordinating an approach to wealth accumulation for Canadian dentists.

Dentists attending this session will be provided with complimentary meal passes which can be redeemed in the Exhibit Hall restaurant on Friday, April 30th.

PERIODONTICS

JACK CATON, DDS

Rochester, New York

AM Session: Periodontal Regeneration of Hard and Soft Tissues – Scientific Rationale and Clinical Applications

Periodontal diseases are managed by elimination of bacterial plaque. This leaves anatomical defects such as bone loss and pockets which compromise the long range prognosis of teeth. Periodontal surgery is done to alter these defects, either by resective or regenerative approaches. This presentation will present the scientific rationale and clinical applications for periodontal regeneration procedures, including root surface modifications, guided tissue regeneration and bone grafting.

PM Session: New Concepts and Techniques of Periodontal Diagnosis – A Status Report for Everyday Patient Management

Diagnosis of periodontal diseases has received much attention in recent years due to new information related to periodontal disease activity. This presentation will give the biological and clinical background for making the critical patient management decisions – when must I initiate treatment? When should I stop treatment?

CDA Annual Meeting – Toronto 1993

Highlights of the 1993 Annual Dental Meeting Program

FRIDAY, APRIL 30TH (continued)

PERIODONTICS

MARK SPATZNER, DMD
Montreal, Quebec

AM Session: **(session below in French)**

PM Session: **Regenerative Periodontics for the 90's**

Historically, periodontal disease was treated by removal of tissue. Advancements in therapy have led to the ability for regeneration or replacement of tissues lost by the disease process. This course will illustrate various techniques used to restore form and function in the hard and soft tissues. Topics will include: soft tissue replacement, hard tissue replacement, regenerative therapy in conjunction with osseointegrated implants.

RETIREMENT INVESTMENTS AND INSURANCE

CLYDE HARRIS, FLMI
JOANNE LAMANTIA, BA
CYRIL GALLANT, C.L.U.
Toronto, Ontario

Lecture sponsored by CDSPI

AM Session: **CDIP & CDA RSP: The Dentists own Insurance and Retirement Choice**

The Canadian Dentists' Insurance Program (CDIP) and the Canadian Dental Association Retirement Savings Plan (CDA RSP) was created by dentists to give dentists the best plans designed just for dentists. CDSPI was created as your company to administer and market them and to make sure they stay the best plans possible. Attend this session and we will show that the CDIP and the CDA RSP are still the best plans for the dentists of Canada and CDSPI, the only administrator. You will hear about:

- How paying step rate versus level premiums can, in some cases, actually save you money;
- The facts behind the CDIP plans;
- How to calculate the coverage level you really need;
- What coverage (plans) are required in your case;
- What is new for the participants of the CDIP;
- How CDA RSP funds are managed and invested;
- What do you need financially to retire;
- Who is CDSPI and why are they involved with the dental profession;
- What does CDSPI do for you.

WEALTH ACCUMULATION THROUGH TAX EFFECTIVE FINANCIAL PLANNING

TED LEVALLIANT,
LeValliant Associates Inc.

Two Seminar times: Friday, April 30 – 1:30 - 3:00 p.m. and
Saturday, May 1 – 8:30 - 10:00 a.m.

This multi-disciplinary computer-designed slide show offers a unique overview of the tax and financial planning strategies available to Canadian dentists. These strategies constitute the basis of a co-ordinated approach to wealth accumulation.

Register for either of these sessions on site at the
LeValliant Associates, Inc. booth.

UNIVERSITY OF TORONTO

Canadian Dental Association Symposium on Periodontal Diseases

The University of Toronto has graciously offered to sponsor a full-day of lectures on Friday, April 30th.

AM Session: **New Diagnostic Methods for Periodontal Diseases**

Moderator/Discussant: Eric Freeman

First Speaker: E. Freeman

Overview – Rationale and Need for New Screening and Diagnostic Methods

Second Speaker: P. Birek

Approaches to Measure Periodontal Destruction and to Assess Risk

Third Speaker: J. Sodek

Crevice Fluid Enzymes as Diagnostic Tools

Fourth Speaker: D. Levy

Impact on Microbiological Tests on Treatment Decisions

PM Session: **Dental Implantology – A Current View**

Moderator/Discussant: P.A. Watson

First Speaker: P. Birek

Establishing an Inhouse Implant Training Program

Second Speaker: M. Pharoah

The Applications of Diagnostic Imaging to Implant Procedures

Third Speaker: L. Symington

Implant Success and Failure

Fourth Speaker: P.A. Watson

Clinical Trials with a New Implant Design

SATURDAY, MAY 1ST

RETIREMENT INVESTMENTS AND INSURANCE

RICHARD WILSON, DDS
Richmond, Virginia

AM Session: **Predictable Success in Restorative Dentistry**

This presentation will deal with both traditional and new restorations, and will correlate esthetics with health and function. New developments in porcelain veneers and tooth colored inlays/onlays will be discussed as well as the indications/techniques for different luting agents. In addition, a review of the elements of patient pleasing anterior crowns will be presented. The presentation will also include discussion of the different types of preparations, a predictable impression technique, and interim restoration techniques.

PM Session: **The General Dentist and the Periodontist: How to find Satisfaction, Quality and Financial Success in Mutual Practice Building**

The course will explore the interrelationship of general dentists and periodontists and will demonstrate practical suggestions for enduring practice strength, vitality and enjoyment for both. Practicing as colleagues will be emphasized. High quality care in a collaborative environment yields both professional satisfaction and personal financial reward. A discussion of the erosion of the referral base will be included. Building successful and long-term patient referral mechanisms will be outlined. General dentists and periodontists are both encouraged to attend. Useful, every day recommendations designed to elevate the practices of both therapists to a new level of "win-win" will be presented.

CDA Annual Meeting – Toronto 1993

Highlights of the 1993 Annual Dental Meeting Program

SATURDAY, MAY 1ST (continued)

FINANCIAL PLANNING

THOMAS H. OLSON
Calgary, Alberta

AM Session: **Current Tax Planning for Dentists**

An introduction to tax planning options for the practicing dentist. This program discusses how the high income earner can reduce tax and what a tax plan can achieve. Considerations relevant to tax planning will be discussed, including reducing audit risk while minimizing tax, avoiding tax penalties and interest charges; taking money out of the dental practice efficiently, when money can be withdrawn from the practice tax-free; what expenses should the practice pay; when can incidental expenses, automobile expenses, personal expenses, and convention expenses be deducted; and what Revenue Canada auditors look for. Reducing tax by employing family members, financing the practice or professional corporation, and tax savings from the deduction of interest will be discussed and consideration will be given to tax planning for the professional corporation or management corporation.

PM Session: **Focus on Tax Planning for the Future**

A detailed discussion of long-term estate and tax planning. A long-term tax and estate plan can reduce a practicing dentist's taxes and create the basis for a comfortable retirement. This program will focus on using current tax planning to meet future needs, minimizing current taxes to prepare for retirement, and planning for the next generation. Preparing for future events by adopting a flexible tax plan will be highlighted, and the discussion will consider how to use wills and trusts, when family trusts are effective or ineffective, minimizing tax through income-splitting, and tax savings available with a professional corporation or trust. Additional topics discussed will include retirement planning with tax-assisted retirement savings programs, RRSP's, RRIF's, and individual pension plans; the impact of foreign taxes, with particular emphasis on what happens to US property on death; and how to develop or update a long-term tax plan.

ORTHO-PAEDIATRIC DENTISTRY

JACK DALE, DDS, FRCD(c)
Toronto, Ontario

Lecture sponsored by the **Canadian Association of Paediatric Dentistry**

AM Session: **Early Orthodontic Treatment, Part I**

PM Session: **Early Orthodontic Treatment, Part II**

ANNUAL FUN RUN

Saturday, May 1st • Run starts at 7:30 a.m.

Sponsored by Healthgroup Financial

Shuttle bus from l'Hôtel departs at 6:45 a.m.

Trek the Martin Goodman Trail along the shoreline of Lake Ontario, passing by Ontario Place, on Toronto's scenic Harbourfront.

Run for the FUN of it!

Table Clinics and Mini-clinics

Plan to visit the Table Clinic Display in the Exhibit Hall at the Metro Toronto Convention Centre during the 1993 CDA Annual Dental Meeting. Table Clinics are 15 minute presentations that are repeated during a three hour period. They will be open for viewing at the following times:

Thursday, April 29th	2:00 p.m. - 5:00 p.m.
Friday, April 30th	10:00 a.m. - 1:00 p.m.
	2:00 p.m. - 5:00 p.m.

A number of clinicians will be participating in this year's mini-clinic program. Mini-clinics are one-hour presentations that will be scheduled during the convention on Thursday, Friday and Saturday. A complete list of participants will be included in a future issue of the *CDA Journal* ... continue to read the blue pages to keep informed.

THE MURRAY McDONALD MEMORIAL LECTURE

Thursday, April 29th • 1:30 - 4 P.M.



The World is Our Challenge

Best-selling authors Fiona McCall and Paul Howard sailed 40,000 miles around the world in a 30-foot sailboat with their two young children.

Their five-year odyssey is an incredible mix of excitement, discovery and challenge, an adventurous modern-day Swiss Family Robinson story.

But more than that, their colourful and entertaining slide presentation underscores how dedicated planning and wilful determination can make a venture work, be it world-wide voyaging or a major life goal.

Toronto • April 28 – May 1, 1993

ONE FORM PER PERSON

PRE-REGISTRATION FORM • Please PRINT

To ensure your requests are accommodated – *register early*. Advance registrations will be accepted until **March 5, 1993**. Each on-site registration will be subject to a \$27.00 administrative fee (GST included).

SURNAME: _____ FIRST NAME: _____ SEX: M F

ADDRESS: _____

(Street) _____ (City) _____ (Province) _____

TELEPHONE: () _____ () _____ () _____

(Postal Code) _____ (Office) _____ (Residence) _____

CDA Membership Number: _____ License Number: _____

LIMITED ATTENDANCE COURSES • WEDNESDAY APRIL 28

Burton Press, D.D.S. – PRACTICE MANAGEMENT – All-day Lecture		
Dentist	(7% GST included) \$	195.00
Staff	(7% GST included) \$	95.00
Terry Donovan, D.D.S. – RESTORATIVE – All-day Lecture		
Dentist	\$	195.00
Staff	\$	95.00
Jeff Miller / Charlotte Peer Miller – ENHANCING THE CAREER OF DENTAL RECEPTION – All-day Lecture		
Staff	(7% GST included) \$	95.00

Torsten Jemt, D.D.S., Ph.D – IMPLANTS – Hands-on Program		
• 1 1/2-DAY COURSE: WEDNESDAY AND THURSDAY (A.M.) •		
Dentist (limited to 48 participants)	\$	350.00

LIMITED ATTENDANCE COURSES • SATURDAY MAY 1

Donald Yu, D.D.S. – ENDODONTICS – Hands-on Program		
Participation in theoretical lecture all day Friday, April 30 is a pre-requisite.		
Dentist (limited to 30 participants)	\$	195.00

* GST is included in the Limited Attendance Practice Management courses. GST is not charged on Limited Attendance Scientific courses. Lunch is included in Limited Attendance courses.

ANNUAL MEETING • APRIL 29, 30 and MAY 1

Choose only one delegate type. 1 registrant per form.

☐ DENTIST (Includes: Scientific sessions, exhibits) Member, CDA or ODA	\$	Nil
Non-member, Others	(7% GST included) \$	155.00
☐ DENTAL HYGIENIST (Includes: Scientific sessions, exhibits) CDHA / ODHA Member	(7% GST included) \$	99.00
Non CDHA / ODHA Member	(7% GST included) \$	120.00
Please include proof of membership or non-member fee will apply.		

☐ DENTAL ASSISTANT (Includes: Scientific sessions, exhibits) CDA / ODN & AA Member	(7% GST included) \$	69.00
Non CDA / ODN & AA Member	(7% GST included) \$	99.00

☐ ADMINISTRATIVE PERSONNEL / OFFICE MANAGER / RECEPTIONIST (Includes: Scientific sessions, exhibits) CDA / ODN & AA Member	(7% GST included) \$	69.00
Non CDA / ODN & AA Member	(7% GST included) \$	99.00

☐ TECHNICIAN (Includes: Scientific sessions and exhibits)	(7% GST included) \$	99.00
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☐ SPOUSE / GUEST (Includes: Scientific sessions, exhibits) Program Registration	(7% GST included) \$	\$50.00
Thursday Tours and Luncheon (opt.)	(7% GST included) \$	60.00
Friday Tours and Luncheon (opt.)	(7% GST included) \$	60.00

☐ CHILDREN (6 to 12 years) Child's Age: _____	(7% GST included) \$	35.00
Thursday program	(7% GST included) \$	35.00
Friday program	(7% GST included) \$	35.00

STUDENTS MAY REGISTER ON-SITE ONLY.

SOCIAL EVENTS		
Opening Ceremony – Thursday, April 29 (Subject to space availability)		
Will attend ☐ Yes ☐ No	\$	Nil
La Cage – Thursday, April 29 (per person)		
President's Gala – "A Cavalcade of Cultures" – Friday, April 30		
(per person)	(7% GST included) \$	75.00
FUN RUN – Saturday, May 1 (A.M.)		
MATINÉE PERFORMANCE Elgin Theatre – Saturday, May 1 (2 P.M.)		
"Joseph and the Amazing Technicolor Dreamcoat"		
(Limited number of tickets available)	(7% GST included) \$	80.00
TOTAL	\$	

The above registration fees are paid by _____

☐ I wish to pay the above total by credit card: ☐ MasterCard ☐ VISA ☐ AmEx	Card#: _____
Expiry date: _____	

Signature of Cardholder: _____

☐ I enclose a cheque payable to the Canadian Dental Association.Post-dated cheques will *not* be accepted.

NOTE: Credit card orders can be faxed directly to CDA Annual Meeting at 1-613-523-3062.

ACCOMMODATION

- ☐ Hotel Registration Form enclosed for _____ (number of) rooms.
☐ Do not require a room / Other arrangements made

Mail registration form with payment to:

1993 CDA Annual Dental Meeting

1815 Alta Vista Drive

Ottawa, Ontario K1G 3Y6

CANCELLATION POLICY:

Cancellation received, in writing, on or before March 5, 1993 — full refund.
 Cancellation received, in writing, after March 5, 1993 — subject to a 25% administrative charge.
 No refund after April 17, 1993

Dentists, Assistants, Hygienists, Office Personnel & Technicians registering by March 5, 1993 will be eligible to win two tickets anywhere Air Canada flies in Europe and North America!

1993 CANADIAN DENTAL ASSOCIATION ANNUAL DENTAL MEETING

April 28 – May 1, 1993 • Toronto

Hotel Reservation Form

Please check appropriate category:

☐ Dentist ☐ Hygienist ☐ Assistant ☐ Office Personnel ☐ Exhibitor (Company name: _____)

☐ Other (please specify) _____

Name: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Telephone: (____) _____ (____) _____
(Residence) (Office)

Type of Room:

☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

Special Requests: _____

Indicate your hotel choice* (by numbering the boxes):

☐ L'Hotel (CDA Headquarters) \$ 140.00 single / double

☐ Royal York (CDA Headquarters) \$ 125.00 single / double

☐ SkyDome Hotel \$ 125.00 single / double

☐ Holiday Inn on King \$ 99.00 single / double

* Prices do not include GST, PST or CCT.

Arrival Date: _____ Arrival Time: _____ Departure Date: _____

All changes and/or cancellations must be made *IN WRITING* through CDA Conventions. Fax to (613) 523-3062

In order to reserve a room, a guarantee for the first night is essential. The guarantee will apply to the first night ONLY.

To cancel your reservation advise CDA Conventions at least three (3) days prior to your arrival.

CHEQUES WILL NOT BE ACCEPTED.

☐ MasterCard ☐ American Express ☐ VISA Card Number: _____ Expiry Date: _____

Signature: _____

Send Reservation Form to: CDA Annual Dental Meeting, Canadian Dental Association,
1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6

DEADLINE for Reservations: **March 5, 1993**

Toronto 1993 • April 28 – May 1

Preliminary Agenda • 1993 Spouses' Program

Thursday, April 29th

- Visit to the Royal Ontario Museum (ROM)
- Visit to Toronto's Harbourfront
- Lunch at the Harbour Castle Westin
- Luncheon Speaker – featuring Robin Armstrong, a local astrologer
- DIAC Tour of the 1993 Convention Exhibit Hall
- Opening Ceremony

Friday, April 30th

- Walking tour of the SkyDome
- Lunch at the Windows Restaurant – SkyDome Hotel
- Fashion Show by Toronto designer/couturier Heather Andersen

Friday, April 30th (continued)

- Tour of the CN Tower

Saturday, May 1st

- "Street Smarts"
Lecture to be presented by the Metro Toronto Police – open to all delegates

Delegates may register for either one or both days. Registration to the convention, as a spouse or accompanying person is \$50.00. This provides the registrant with access to the Scientific Sessions on Thursday, Friday and Saturday and the Exhibit Hall. To participate in the tours and luncheons you must register for the Thursday package and/or the Friday package at a cost of \$60.00 for each day.

A Ton of Fun!

The 1993 Children's Program (for children 6 and over)

PRELIMINARY AGENDA

Thursday, April 29th

A full-day visit to the Metro Toronto Zoo including rides on the Monorail and a guided tour.

Lunch at McDonald's

Friday, April 30th

A full-day visit to the Royal Ontario Museum including a tour of the museum and the planetarium.

Lunch at the Museum.

Registration for the Children's Program is on a daily basis. Each day is available at a cost of \$35.00 per child.

GÖTEBORG

THE MAGNIFICENT GATEWAY
TO SCANDINAVIA

The beautiful city of Göteborg on the west coast of Sweden will host the **1993 FDI ANNUAL WORLD DENTAL CONGRESS**, August 29 – September 2. An exciting scientific programme will be presented in first class congress facilities, centrally located in Göteborg. Main themes for the congress will be

- *Implant dentistry – success and failure*
- *Clinical application of dental materials – whom to trust?*
- *Preventive dentistry in practice*

A vast dental exhibition will be held in conjunction with the congress.



Attend the 1993 FDI World Dental Congress in Göteborg, Sweden with CDA Conventions and Participate in the Official 1993 FDI Tour Program



Göteborg – beautiful and charming harbour city in a breathtaking archipelago.

CDA Conventions is offering CDA Members a special package deal to the 1993 FDI World Dental Congress being held in Göteborg, Sweden. The itinerary combines a trip to the 81st World Dental Congress with a unique out-of-country seminar program in the fascinating country of Turkey.

Travellers will depart from Toronto on Sunday, August 29th and arrive in Göteborg on Monday, August 30th. Departure from Göteborg to begin your odyssey to Turkey will take place on Friday, September 3 via London, England. The itinerary includes stops in Istanbul, Ankara, Cappadocia, Pamukkale, Denizli, Khushadasi and Izmir. For more details on the 1993 FDI World Dental Congress and the travel itinerary contact CDA Conventions at 1-800-267-6354.

the MISSION IS *the* MESSAGE

THE MISSION

The Canadian Dental Association is:

The authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada – dedicated to meeting member needs, and to the promotion and provision of optimal oral health for Canadians.

THE MESSAGE

CDA's mission delivers an important message to every dentist in Canada.

- **It defines** CDA's essential role in the world of Canadian dentistry.
- **It directs** CDA's every plan and action.
- **It declares**, to over 10,000 member dentists across Canada, that their national association is dedicated to serving their needs.

CDA. Serving Member Dentists across Canada.



CANADIAN
DENTAL
ASSOCIATION
L'ASSOCIATION
DENTAIRE
CANADIENNE



Raison d'être: *What CDA's new mission statement means to you*

CDA's new mission statement is more than simply the articulation of some lofty ideals. It is, in fact, the cornerstone on which to build a stronger, more dynamic and a more effective organization to represent and to serve dentistry in the 1990's.

TIMES *have* **CHANGED**

The need for a redefined mission is two-fold. First, times have changed. A big part of that change is economic. The booming Eighties are gone, taking with them a train load of unrealistic expectations. We can't have it all; we can't do it all. Not unless we have all the money in the world. And we don't.

The Nineties are proving sobering for all of us. We are all working harder just to hold our own in the face of a dizzying array of issues and challenges: governments looking for more tax dollars, public concerns about threats to their health from dental practices, changes to third party plans that threaten the quality of care in the interest of cost containment, media fanning the flames of public anxiety around anything they can find to make news... In today's environment, every dentist's practice depends in no small part on the authority and credibility with which CDA can be there for us and speak for the profession.

DENTISTRY *has* **CHANGED**

Second, dentistry itself has changed. Today's dentist is facing the new realities of establishing or maintaining a practice. Getting started is more difficult than ever for the recent graduate. A degree is no longer a ticket to an immediately rewarding career. The costs of establishing a new practice are prohibitive; associateships are in short supply. The knowledge explosion makes it difficult to keep pace with dental science and practice. Marketing has emerged as a skill every dental practice needs. What patients want and need puts increasing pressure on practitioners to keep pace. In short, as dentists we all need help,

the kind of help CDA provides as the national resource.

Today. **TOGETHER.**

The range, nature and speed of change are further indications of the importance of the dental profession working together. Strength comes not simply in sheer numbers but in the ability to forge consensus, to formulate policies, standards and guidelines and to plan and execute programs that enable the individual dentist to maintain his or her professional independence. Issues such as infection control, mercury toxicity, or GST, don't recognize political boundaries. We only have credibility, if we have a national voice. In short, national unity is as important to dentistry as it is to the country as a whole. The focus of such unity for the profession falls quite naturally to the CDA.

A **SENSE OF MISSION**

Authoritative voice. Resource. Focus of national unity. These are the essential roles to which CDA will direct its time, energy and resources in the years ahead in support of two fundamental principles: service to its members and advocacy for the optimal oral health of Canadians. All this adds up to a renewed, rededicated CDA, armed with new clarity of purpose and direction. It means that every member can expect CDA to provide continuing leadership and support in these challenging times.

Bernard Dolansky, BA, DDS, MSc
President of the Canadian Dental Association

Case Report

A Case of a Hepatitis B Infected Practitioner

Chris Christianson, DMD
Joel Epstein, DMD, MSD
Rick Mathias, MD, FRCP(C)
Vancouver

ABSTRACT

The first case of a dental practitioner infected by a blood-borne pathogen to be identified to the College of Dental Surgeons of B.C. and reviewed by the Dental Profession Advisory Program's infected practitioner program committee is reported.

After the committee was contacted, the infected practitioner's status was evaluated and guidelines were provided to him. This paper reviews the committee's decision-making process, particularly with respect to its management of the infected dental practitioner.

SOMMAIRE

Voici un compte rendu du premier cas d'infection d'un praticien dentaire par voie sanguine, cas qui a été reconnu par le Collège des chirurgiens dentistes de la Colombie-Britannique et revu par un comité consultatif s'occupant des praticiens infectés.

Après que le comité a été alerté, on a évalué l'état de santé du praticien infecté et on lui a donné les directives qu'il devait suivre. Cet article porte sur la manière dont le comité a pris sa décision, en particulier en ce qui a trait à la gestion du praticien infecté.

Introduction

The worldwide human immunodeficiency virus (HIV) epidemic continues to concern both health care providers and patients. Although the perceived risk of HIV infection overshadows that of Hepatitis B virus (HBV) infection, the available data indicates that HBV remains the sentinel blood-borne pathogen. To date, the Centers for Disease Control (CDC) in Atlanta have reported only one cluster of cases where HIV may have been transmitted to patients via a dental practitioner.¹ In spite of more than 10 years of experience

with HIV, and intensive surveillance, no other clusters of HIV transmission have been identified.¹⁻³

Prospective data on the infection of health care providers indicate that the risk of contracting HIV as a result of a sharps exposure to known contaminated blood products is less than 0.3 per cent. However, there is an up to 30 per cent risk of contracting HBV through similar exposures.¹⁻³ There are no reported cases of mucosal splashes or aerosols being associated with the transmission of these blood-borne pathogens.¹⁻⁴

Other viruses of potential concern to health care providers include the Hepatitis C virus (HCV), which appears to be transmitted via similar routes as HIV and HBV.⁴ However, the risk of infection from HCV appears to be less than that of HBV.

While the risks of transmission between patient and health care worker, or vice versa, are low, particularly with respect to HIV, public concern and anxiety about HIV and the nature of HIV infection have grown. As a result, a continual review and updating of the virus's epidemiology has been necessary to ensure that appropriate infection control precautions may be in place. CDA has actively supported and developed infection control guidelines for Canadian dentists, including practise guidelines for potentially-infected dental health care providers.

Case Report

To date, the Infected Practitioner Program (IPP), in conjunction with the related medical health officer, has considered the case of one HBV-positive dentist. This individual became aware of his status due to fatigue, malaise and a change in the color of his urine. He contacted his physician, and was diagnosed as having an HBV infection.

At the time of diagnosis, the dentist was HB surface antigen positive and HB core antigen positive, and he voluntarily

withdrew from practice. No source of infection was identified, but it was felt that exposure to sharps was the most likely cause, as there was no history of personal risk behaviors. Additional serologic study indicated that Hepatitis B e antigen (HBeAg) was not present, but that anti-HBe had developed. These findings suggested that the individual would eventually resolve the infection. Furthermore, a lack of HBeAg indicated a greatly reduced risk of transmission. Based on these serological findings, the IPP informed the dentist that he could return to practice, providing appropriate infection control procedures were in place and adhered to.

The dentist's own account of the events surrounding his HBV infection, as well as his symptoms and his experience with IPP, follows:

"I became concerned when I noticed my urine was dark yellow. The following day I went for blood tests, which led to the diagnosis of hepatitis B infection. My physician told me I must cease practice immediately, which I did willingly.

"I was shocked and confused. I had no idea how I'd become infected. I have had no needle pricks or torn gloves during 'wet' procedures, and I use all the recommended barrier techniques. I have no history of personal risk behaviour that might have led to this infection.

"I was stunned at the prospect that I might never practise again if I remained infectious. Even scarier was the possibility of losing my life as a result of the infection. As it turned out, I was very lucky. Within a short time, I was out of the contagious stage and into recovery.

"It was gratifying that through all of this, my profession was there for me. The College of Dental Surgeons of B.C.'s member services division and the DPAP's Infected Practitioner Program were very helpful with their advice and support.

"As a result of my experience, I strongly advise my colleagues to receive

their hepatitis B inoculations immediately and, further, to check out their support groups to make sure they are there when they need them."

IPP agreed. When its subcommittee inquired into the dentist's HB vaccine status, and was told that he had never been immunized, they recommended that the other members of his practice undergo HB vaccination. The subcommittee also indicated that no further measures were required.

IPP's subcommittee could have gone one step further, by recommending that all dental care providers be immunized. This case demonstrates the minimum consequences that may result from an HBV infection. The dentist in question was lucky.

Discussion

In order to deal with the issue of dental health care providers who are infected with sexually-transmitted or blood-borne pathogens (HBV, HIV, HCV), it has been widely recommended that mechanisms be established to protect the public and to provide support to infected providers. In January of 1992, the College of Dental Surgeons of B.C. instituted the Infected Practitioner Program. The challenge was to provide a program that would deal with the issue of infected practitioners in an effective and responsible manner, while being sensitive to the needs and the rights of these individuals. With that in mind, IPP was developed and placed under the umbrella of DPAP, which has provided confidential assistance to hundreds of dentists, allied dental personnel, and family members over the past 10 years. The program is based upon the following beliefs and assumptions, which are supported by current research and expert opinion:

- 1. The greatest benefit to an individual is likely to occur if the infection is identified early. Prompt therapy to delay disease progression as well as other avenues to control disease are necessary, and infected practitioners must be provided with confidential access to medical and dental expertise.
- 2. A process must be in place to help infected dental care providers. Unless this process is non-threatening, voluntary, and confidential, it will not be utilized. Providing a service that dental care providers will trust is the most effective way of protecting the public's interest, since it is likely to en-

courage the greatest number of infected individuals to seek expert care.

- 3. Mandatory testing for HIV and other blood-borne pathogens is not recommended because of the demonstrated low rate of seropositivity and the very low risk of transmission from dental care providers to patients. In 1991, the Centers for Disease Control (CDC) indicated that 171 dental care workers had AIDS, and estimated that approximately eight to 10 times that number were HIV positive. Based on these low numbers and the current epidemiology of HIV with respect to the risk of it being transmitted to patients, a diversion of available resources to institute a mandatory testing structure is not warranted.^{1-3,5} Furthermore, mandatory testing and consequent reporting could lead to breeches of confidentiality, which would likely have serious negative impacts on individual practitioners and the effectiveness of IPP.

- 4. The risk of HIV transmission from health care providers to patients is extremely low. Therefore, HIV infection alone is not sufficient grounds to limit a health care provider's duties. This position has been supported by the American Medical Association, the American Dental Association, and the Centers for Disease Control. The American Medical Association's council on ethical and judicial affairs states: "Neither those who have the disease (AIDS) nor those who have been infected with the virus should be subjected to discrimination based upon fear or prejudice."

Infected dental care providers who may need to modify their practices as a result of expert advice should, wherever possible, be given the opportunity to continue providing appropriate patient care. However, careful monitoring of their disease status is required, particularly in the case of HIV, where neuropathies and/or dementia may develop. An individual's ability to practice and willingness to adhere to universal precautions and infection control procedures should be monitored as well. All dental care providers, regardless of their infection status, should be able to continue in their career as long as they are qualified, functionally able to care for patients, and willing to adhere to universal precautions and infection control procedures. When they are no

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longer able to do this, they need to be assisted with career counselling, re-training, and transition, if appropriate.

- 5. It is not possible to define exposure-prone procedures, as there are no instances where a specific procedure is known to have caused HIV transmission. CDC's position with regards to the delineation of exposure-prone procedures has been withdrawn. Today, the issue of concern is not so much the HIV status of a health care provider, but his or her compliance with infection control guidelines. Compliance with CDA's infection control guidelines is essential for infected practitioners. A failure to do so may indicate the need for intervention, although to date there has been no documentation of the efficacy of barriers in preventing the transmission of HIV to patients. HIV transmission from a health care provider to patients has only been identified in one cluster of cases, and the mechanism of transmission is unknown. However, there is evidence to suggest that the risk of a carrier transmitting Hepatitis B virus infection to patients is substantially reduced when infection control barriers are in place.³ The documentation with respect to infection control barriers and disease transmission from the patient to the health care provider is less well substantiated. There are two studies in which this has been demonstrated, and others where the protection of the provider with respect to seroconversion on exposure to HBV and HIV has not been demonstrated.⁶
- 6. Public disclosure is undesirable and unproductive. There is no evidence that non-disclosure of the carrier status of the provider places patients at risk. Furthermore, disclosure would be disastrous for the infected dentist's practice. A Maryland survey indicated that only 32.5 per cent of respondents would remain in the care of an HIV-infected dentist if they were informed of his or her condition.
- 7. Those who have been potentially exposed to infection through personal risk behaviors, blood products, or accidents should be offered testing along with pre- and post-test counselling. They would then be able to make informed choices about medical management with respect to prophylactic treatment and therapy.
- 8. Each case needs to be assessed on

an individual basis to determine whether patient care duties can be performed adequately and safely or whether duties should be modified or curtailed. These decisions are best made by a panel of experts.

- 9. Infected individuals should be encouraged to have periodic evaluations of their health status to identify and evaluate any signs and symptoms of progressing disease.

On contacting IPP, an infected practitioner receives information about the service and is encouraged to participate fully. This includes signing appropriate "release of information" forms, having a thorough medical assessment by a knowledgeable physician, complying with recommended treatment (e.g. medical, emotional, alcohol/drug, family counselling, support groups), consultation with an infection control specialist regarding office procedures, attendance at an infection control course, participation in ongoing medical follow-ups and other procedures deemed necessary by IPP. Individuals may refuse to participate in any of the recommended procedures. However, they would then be informed of the potential consequences.

A subcommittee of IPP is available to assist with cases. This subcommittee is composed of a group of enthusiastic and dedicated members of the medical and dental profession who have expertise in epidemiology, public health, infection control and the treatment of sexually-transmitted and blood-borne diseases. Information regarding each client, excluding the client's name, is provided to the subcommittee for consideration. It may then make recommendations regarding further testing or evaluation, modification of practice and professional help. Again, the client may refuse to comply.

In every case, if the subcommittee found evidence to suggest that a client was a source of danger to the public as a result of impairment and/or inadequate infection control, DPAP would inform this client that he or she would be expected to comply strictly with the subcommittee's recommendations. If the client refused to accept and follow these recommendations, the subcommittee would then vote on whether to report this individual to the registrar of the College of Dental Surgeons of B.C. On receiving a 50 per cent vote in favor of reporting, the chairman of the subcommittee would report to the registrar, after receiving the client's name from

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DPAP. This would be the only scenario in which complete client confidentiality would not prevail.

This first case of an infected practitioner's situation being identified to DPAP, and reviewed, demonstrates the value of having an established protocol, a committee to provide support to the infected provider, and a means of addressing the public's concerns. ■

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References

1. CDC, Update: Investigation of Patients Who Have Been Treated by HIV Infected Health Care Workers. *MMWR* 41:34-7, 1992.
2. Epstein, J.B., Scully, C. and Porter, S.R. The Risk of Transmission of Human Immunodeficiency Virus of Dental Practice. *Oral Health*, June:33-38, 1992.
3. CDC. Pilot Study of a Household Survey to Determine HIV Prevalence. *MMWR* 40:1-5, 1991; Update. Transmission of HIV Infection During an Invasive Dental Procedure - Florida. *MMWR* 40:21-33, 1991.
4. Epstein, J.B., Porter, S.R. and Scully, C. Non A, Non B Hepatitis and Dentistry: A Status Report for the American Journal of Dentistry. *Amer J Dent* 5:49-56, 1992.
5. Siew, C., Chang, S., Gruninger, S.E. et al. Self-Reported Percutaneous Injuries in Dentists: Implications for HBV, HIV Transmission Risk. *JADA* 123:37-44, 1992.
6. Noble, M.A., Gibson, G.B., Mathias, R.G. et al. Hepatitis B and HIV Infections in Dental Professionals: Effectiveness of Infection Control Procedures. *J Canad Dent Assoc* 57:55-58, 1991.



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Specialty Feature

Planning for Income Tax: A Case Study

Barry McNulty

Tax planning today is complex and often very confusing. Many alternative strategies are available, but only a select few will be appropriate for your unique situation. The challenge is to choose the right strategy and avoid the potential pitfalls.

It's not always easy. Let me introduce you to the Smiths. By reviewing the tax situation of this hypothetical dental family, you'll become familiar with some general tax planning methodology. It may also be possible for you to relate some of the Smith's tax planning options to your own circumstances.



counts receivable (from the practice) amount to \$75,000.

The Smith's have two boys, ages 11 and 17. Both Ernie and Louise will be 43 this year. Ernie has about \$100,000 in his RRSPs, while Louise has \$32,000. In addition, Ernie has a \$45,000 portfolio of mutual funds, which has enjoyed minimal appreciation; a \$40,000 guaranteed investment certificate (GIC), which matures shortly; and approximately \$5,000 in Canada Savings Bonds (CSBs), which are held in his children's names (the money came from baby bonuses). Neither of the Smith's have used their capital gains exemption. The only money the Smith's owe is an open, \$50,000 mortgage on their home, which carries a favorable interest rate of seven per cent. After paying their annual living expenses – including the mortgage payments, which equal about \$7,200 per annum – and income taxes, the Smith's expect to have about \$40,000 per year in discretionary cash (this amount includes both their incomes, and is before vacations or other non-essential expenditures). Ernie hates paying taxes and is presently two quarterly payments behind. He does have most of this money set aside in his "tax account," however.

It's the beginning of 1993. Ernie and Louise are considering their future. They would like to be financially inde-

pendent by their middle fifties, provide their children with a good education and start in life, and be able to maintain a reasonable lifestyle in the interim. Ernie doesn't want to get out of dentistry – he likes what he does – but once his kids are finished school and, hopefully, independent, he would prefer to work by choice rather than out of necessity. As well, both Ernie and Louise feel that they pay way too much tax.

To help reduce the family's tax burden, Ernie is considering the ins and outs of investing in a limited partnership real estate scheme. Although he does not have to put up much cash initially, he'll have to commit to an investment of over \$150,000 if he wants to buy in.

Before going on, it would be worthwhile to review four "speed bumps" on the road to good tax planning:

1) The General Anti-Avoidance Rules (GAAR) can be summarized as follows: If you enter into a transaction or series of transactions for the primary purpose of gaining some form of tax benefit, Revenue Canada may consider this activity to constitute an "avoidance" transaction, and therefore move to deny you the benefit. It is advisable, therefore, to ensure that your tax planning decisions are based on valid business considerations.

2) The attribution rules are designed to prevent individuals in a higher income tax bracket from achieving a tax benefit by giving or loaning investment funds to a spouse or minor child in a lower marginal tax bracket. Any resulting income will therefore be "attributed" back to the "actual" investor.

Despite these rules, much of the effort that goes into tax planning today

The Smiths

Dr. Ernie Smith is a dentist who has been in solo general practice for approximately 13 years. His office is located in a province that does not allow dentists to incorporate and his year end is January 31.

At the end of the most recent fiscal period, his gross billings were estimated to be \$360,000, with his expenses running at 62 per cent of revenue. Therefore, Ernie's net income – before his accountant makes final adjustments – should be \$136,800. This net will amount to an increase of about 20 per cent over his last year end.

Ernie's office is located in a medium-sized, growing suburban community, in leased premises. His present lease has two years left to run. Ernie has been thinking about either renovating his existing office or relocating to larger, more pleasant surroundings. His wife, Louise, is employed in the practice as a bookkeeper at a salary of \$17,500 per year. They also have a management company, E & L Dental Management Inc., which has been inactive since the beginning of 1991 because of the GST. All shares in the company are owned by Louise. The company, in turn, owns some of the practice's equipment and holds term deposits of \$60,000. It's ac-

revolves around income splitting of some form or another. If you are taxed at approximately 50 per cent and your spouse is taxed at about 27 per cent, there can be a significant benefit in having the family's investment income earned in your spouse's name.

There is no attribution of capital gains on funds or assets that are loaned or gifted to children. Capital gains are attributable to similar transactions between spouses unless the asset in question was purchased for its fair market value. There is no attribution of capital gains on loans, provided the lower of a standard commercial interest rate or Revenue Canada's prescribed interest rate is charged and actually paid. Second generation income is not attributable, e.g. the income earned on the reinvestment of earnings. Finally, the attribution rules only apply to income from property. If you loan or transfer active business assets to your spouse or children, and they actually carry on a business, there should be no attribution of the income.

3) Cumulative Net Investment Loss (CNIL) affects your ability to use the capital gains exemption. Every individual (but not corporations or trusts) is entitled to lifetime capital gains equal to \$100,000. If the capital gain is realized from the sale of a qualifying small business or farm property, however, this exemption increases to \$500,000. In effect, therefore, this is really tax exempt income. CNIL is the government's way of saying that you can't have your cake and eat it too. It's a notional account that keeps track of your investment income and investment losses. If you have an excess of investment-related losses in your CNIL account – a positive balance, in other words – it will serve to reduce the amount of the capital gains exemption available to you. CNIL does not eliminate your capital gains exemption. It simply delays your ability to use it until your account is at zero or in a negative balance. The losses that get added to your CNIL account include deductible interest expense and losses from most tax shelters. Conversely, if you earn interest or dividend income, your outstanding CNIL account will be reduced.

4) The Alternative Minimum Tax (AMT) is not usually a problem for dentists, unless they use a lot of tax shelters, such as investing in movies, or resource write-offs. It's a separate tax calculation, where you add back certain

tax shelter deductions, including the untaxed quarter of realized capital gains (even if the capital gains exemption is used) and RRSP contributions to your taxable income. A \$40,000 exemption is then deducted, and the federal tax is calculated at 17 per cent. To make a long story short, you compare your AMT and your regular calculation, and then pay the higher amount. If you have to pay AMT, however, the good news is that you can carry the amount forward for up to seven years and use it to reduce your future regular tax liability.

Bearing these tax planning "speed bumps" in mind, we're now ready to return to our consideration of the Smith's situation. Remember that the benefits that are possible through tax planning include not only immediate tax savings, but also a deferral of tax. Tax strategies typically look for ways to:

- Split income with taxpayers in lower marginal tax brackets;
- Maximize deductions to reduce current income;
- Change the character of investment income so that it is tax favored, like capital gains or dividends, or tax deferred like the income you earn in an RRSP, or some forms of tax-exempt life insurance products;
- Defer either tax or income into the future on the premise that a tax dollar payable today is far more costly than a tax dollar payable at some point in the future (the further away, the better).

From the point of view of income splitting, it's pretty clear that assets are starting to build up in Ernie's name at a much greater rate than in Louise's. This not only has implications for today, it will also have an impact on the couple's retirement plans. When they are eventually living off the income generated by their assets, they will require less capital to generate an acceptable standard of living if this income is evenly split between them. By splitting the income, they also split the tax burden, as opposed to all or most of the assets being in Ernie's hands and taxed in his name.

Recommendations

Income Splitting

1) To begin with, the easiest way to start addressing this problem is to have

Louise save all of her income while Ernie pays all the couple's expenses. This would include Ernie giving Louise money to make her RRSP contribution and pay her income tax. A cheque for the amount of tax payable would be included with Louise's tax return (as no income is generated from either of these actions, there is no attribution).

2) It might also be prudent for Ernie and Louise to talk to their advisors to determine how they might increase Louise's salary. A salary must be reasonable relative to the duties performed. If Louise was the office manager rather than the bookkeeper, a higher salary might be justified. The Smiths might also consider giving their children some part-time work. Of course, any money the children earn should be saved for reinvestment at their lower marginal tax rate.

3) For income splitting purposes, Ernie may also wish to consider a tax-exempt form of life insurance product. Today, over the long term, certain insurance products can offer a very competitive after tax rate of return. Ernie would pay the premiums and own the policy. On retirement, or at some point in the future, ownership of the policy could be changed to Louise's name, and any income taken out would be taxed to her.

4) It would also be reasonable for Ernie to make spousal contributions to Louise's RRSPs.

E & L Dental Management Inc.

Today, many dentist-established management companies are no longer active. The problem is that a management company often has assets that include a significant receivable from the practice. Unless this situation is dealt with, it could have negative tax consequences.

1) Ernie should consider borrowing money from his practice to pay off the \$75,000 he owes to E & L. This would leave Ernie with tax deductible interest in the practice.

2) On the other hand, when the \$75,000 is added to the \$60,000 E & L has already invested in term deposits, the company will have enough funds to diversify its holdings. This would justify an investment in a portfolio of Canadian, dividend-earning blue chip stocks. Dividends, for the first time in many years, are now paying rates that are competitive with more traditional

interest-generating vehicles. The interesting thing about this strategy is the fact that, under current tax law, E & L will be able to receive dividends and pay a refundable tax equal to 25 per cent. When the dividends are paid out, the 25 per cent refundable tax will be returned to the corporation. As Ernie and Louise don't need the money to live on right now, the tax on this income could be deferred into the far distant future.

3) Finally, the Smiths may want to re-think the idea of not paying E & L any fees for management services or the leasing of equipment. It's possible that the company could avoid charging GST if its fees were less than \$30,000 per year. From a tax deferral and income splitting viewpoint, it may even make sense for E & L to charge fees greater than \$30,000 per year (provided Revenue Canada's guidelines were followed).

GST, which is tax deductible, has a net cost of 3.5 per cent to the practice (assuming it is taxed at a rate of 50 per cent). However, if the management company is taxed at a rate of 23 per cent, i.e. on qualifying small business income, the long-term benefit of this potential tax deferral may outweigh the 3.5 per cent cost of the GST. The actual tax rate charged to the company would vary from province to province. This is a tax deferral strategy, as tax would have to be paid when Ernie and Louise take funds out of the company. A precondition of using this strategy is that you won't have to draw funds from the management company for some time.

Non Deductible Interest

Ernie and Louise presently have a \$50,000 mortgage on their home. The seven per cent interest charged on this loan is not tax deductible. At the same time, Ernie has \$40,000 in GICs and \$45,000 in mutual funds. Tax planning also incorporates financing. To pay \$1,000 of non-deductible interest, Ernie has to earn \$2,000 of net practice income. On the other hand, if this same \$1,000 expenditure was tax deductible, only \$500 of net practice income would be needed to service the debt.

Investment planning involves obtaining returns that reflect the risks undertaken. It's highly unlikely that Ernie could find a comparable passive investment alternative, from a risk viewpoint, to provide the seven per cent after tax rate of return that he would achieve by paying off his mortgage. Paying off this

debt should also provide enough cash flow to pay for all or a significant portion of his older child's university education.

Finally, as much as he does not enjoy making his quarterly tax payments (who does), Ernie would be well advised to make them on time. It is not good business to pay Revenue Canada penalty interest, which is not deductible, while at the same time earning taxable income on this money at a lesser rate.

It was mentioned earlier that, as a form of tax shelter, Ernie is considering a limited partnership investment in real estate. Ignoring the bad track record of this type of investment, he may want to first consider buying real estate for his practice. From a tax planning viewpoint, it can be much more efficient. Unlike a limited partnership, where a lot of the deductions have to be spread over five years, most of the costs associated with buying real estate for his practice would be deductible right away. Also, as this real estate would be considered as an active business asset, these tax deductions and any interest expense would not adversely affect his CNIL account. Of course, the acquisition must also make sense from an investment point of view. Any tax benefits related to this investment should simply be the "icing on the cake."

Other tax planning possibilities the Smith's may wish to consider are:

- A Registered Educational Savings Plan for their youngest child.
- Making an over-contribution to their RRSPs of up to \$8,000. Although the contribution will not be tax deductible, this strategy is worthwhile if the funds can be left in the RRSPs to compound for a period of 15 to 20 years, depending on the rate of return.

RRSP contributions should be made at the beginning of the year, rather than at the end of the year, to extend the tax-free compounding.

It would be inappropriate for Ernie and Louise to establish a trust for their children, as they do not have enough capital to make it worthwhile. If they had, say, \$300,000 of uncommitted capital, it could make sense to loan the money to a trust and take the attribution on the first generation income. This would allow the trust to acquire capital of its own. For example, \$300,000 in-

vested at seven per cent would earn \$21,000 in the first year. This \$21,000 would then become the property of the trust, and future investment income on it would not be attributed back to the Smiths. Over five years, the trust could accumulate \$120,765 in this manner, which would attract little or no tax and still remain in control of the parents.

Depending on how responsible their oldest child is, the Smiths could then loan him investment capital. This money would be invested in stocks, bonds or other money-generating vehicles scheduled to mature after the child turned 18, thereby avoiding attribution, as he would no longer be a minor.

Both the Smiths should, of course, look for opportunities to use their capital gains exemption. Given their current situation, this will have to be left to future planning. For example, bonds that are selling at a discount and will mature in the next few years are a good way of generating predictable capital gains.

Generally speaking, the Smiths would be well advised to stay away from tax shelters unless the amounts invested are insignificant relative to their other resources, and they have these opportunities reviewed by their professional advisors first.

So, it's the beginning of 1993. What actions should you take to reduce your personal tax burden? Like the Smiths, the place to start is with an assessment of your objectives. Next, consider all aspects of your practice and personal financial circumstances. Sound tax planning does not take place in a vacuum. It should not be considered as a stand-alone strategy. Instead, because it can have an impact on every aspect of your life – from retirement, estate, and investment planning, to your day to day practice – you must consider the whole picture.

The complexity of tax-planning strategies dictates that you should seek professional advice before implementing anything new. In addition, you should have a professional review your existing plans at least once per year to ensure that they remain current and continue to meet your needs. ■

Barry McNulty is president of Chancellor Consultants Inc. of Markham, Ontario, a firm that specializes in working with dentists.

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Ontario Dentists: 1. Radiologic Practices and Opinions

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ABSTRACT

In February 1991, about 10 per cent of Ontario's general dentists were polled via a mail survey to gather information about their radiological practices and opinions. Responses were received from 413 out of 537 general practitioners, for a response rate of 77 per cent.

A large majority of dentists (86 per cent) have no written office policy and/or protocol for selecting patients for X-ray examination, and just over half (54 per cent) primarily use clinical experience to select patients for these examinations. In the majority of practices (57 per cent), radiographs of asymptomatic recall patients are taken after both their history and clinical examination are complete. A similar percentage (56 per cent) of dentists are opposed to explicit guidelines for radiological examinations.

SOMMAIRE

En février 1991, on a effectué par courrier un sondage auprès d'environ 10 p. cent des dentistes de l'Ontario afin de recueillir des données sur leurs habitudes et leurs opinions touchant les radiographies. Sur les 537 praticiens généralistes interrogés, 413 ont répondu au questionnaire, soit 77 p. cent.

Une grande majorité de dentistes (86 p. cent) n'ont pas de politique ou de protocole écrit pour déterminer quand les patients ont besoin de radiographies. A ce sujet, un peu plus de la moitié (54 p. cent) s'en remettent à leur expérience clinique. Dans la plupart des cabinets (57 p. cent), les radiographies prises lors des visites de rappel des patients asymptomatiques le sont après l'anamnèse et l'examen clinique. Et dans une proportion semblable (56 p. cent), les dentistes sont contre des directives explicites touchant les prises de radiographie.

Introduction

The exposure of individuals to radiation from dental radiographs is of concern to governments, professional organizations, and the public. In Ontario, the Healing Arts Radiation Protection (HARP) guidelines¹ were designed to keep radiation exposures "as low as reasonably achievable" (ALARA). The guidelines recommend limiting the use of radiation to clinically-indicated procedures, while using efficient exposure techniques and optimizing the operation of radiation equipment.² Although the risks to an individual from a single dental radiograph are very low, they increase with the frequency of radiological examinations per patient, and by greater numbers of persons being radiographed. Uncertainty concerning actual exposure levels and dose-response relationships suggests that dental radiographs should be performed only when sufficient benefit to the patient will result. The routine prescription of radiographs for all patients in the same manner would result in an unnecessary overexposure of some individuals to radiation.

Increased public awareness about health care and concerns about the cost of dental services have challenged the profession to defend the appropriateness of its procedures. With the simplification of technical procedures, radiographic examinations have become easier to administer. This has facilitated a more frequent use of radiographs for diagnosis. As a result, over the last 20 years there has been an increase in the average number of intraoral radiographs administered per person per year in some European countries and the United States.³ This has led to an escalation in the costs of dental care. In the U.S., for example, it has been estimated that over \$1 billion is spent annually on dental radiographs.⁴ Some be-

lieve that the growth of dental radiology in private dental practice, which has occurred despite recent declines in dental caries, is explained by the combination of a fee-for-service mechanism and dental insurance coverage.^{5,6}

In the past few years, there has been a dramatic decline in dental caries in children and adolescents in Ontario⁷ as well as in other parts of the developed world. This suggests that the current frequency of routine radiographs, which is based on previous levels of caries, may no longer be appropriate. It is therefore of interest to examine current radiographic practices and opinions in Ontario, as well as how these practices and opinions vary according to the patient's oral health status.

This paper, the first installment in a three-part series, gives the preliminary findings of the author's mail survey of Ontario general dentists. The remaining two papers associated with this survey^{8,9} will examine the use of bitewing radiographs and restorative treatment decisions, and the prescription of radiographs by Ontario dentists relative to recent U.S. guidelines.

Methods

A questionnaire was sent to a sample of Ontario general dentists to obtain information about their radiological practices and opinions. The survey questions were developed through a review of the relevant dental and medical literature in consultation with members of the University of Toronto dental faculty. A draft questionnaire was then pretested on a number of dentists and revised accordingly.

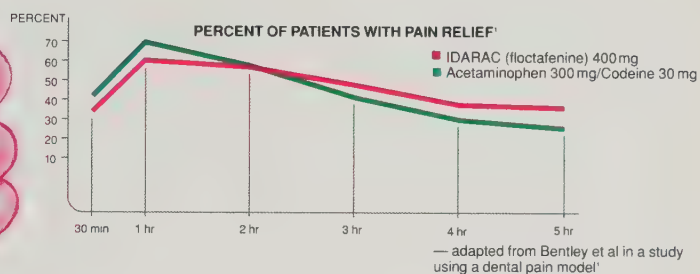
The sample size required to give precise (95 per cent certain, $\alpha = .05$) estimates was then determined. To ensure that the responses to questions on attitudes, beliefs, and behaviors were within five per cent of the population response ($N = 4,875$, Ontario general

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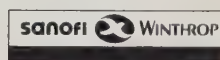


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TABLE I**Numerical Details of the Survey's Administration**

Feature	Description	Number
Sampling Frame	RCDS mailing list Jan. 21, 1991	5,593
Target Population	General Practitioners	4,875
Selected Sample	Random start systematic sample	559
Noneligible Responders	Specialists, retired dentists, etc.	22
Eligible Responders	559 - 22 =	537
No response	Did not return questionnaire	107
Withdrawal	Returned questionnaire unanswered	17
Responders	537 - (107 + 17) =	413

TABLE II**Characteristics of Responders**

Characteristic	Number	Per cent	Median	Range
Gender				
Female	54	13.1%		
Male	359	86.9%		
Total:	413	100.0%		
Year of Birth			1949	1912-1967
Graduation Year			1977	1934-1990
Years in General Clinical Practice			14	1-57
Practice Type				
Private	401	97.1%		
Public Health	4	1.0%		
Canadian Forces	5	1.2%		
Other	3	0.6%		
Total:	413	100.0%		

TABLE III**Distribution of Responses About Radiological Practice Policies**

Question	Number	Per cent
Do you have a written office policy and/or protocol for selecting patients for radiological examination?		
Yes	58	14.2%
No	350	85.8%
Total:	408	100.0%
Do you usually obtain new patients' recent radiographs from their previous dentist?		
Yes, always	109	26.4%
Yes, usually	158	38.3%
Sometimes	116	28.1%
Rarely or never	30	7.3%
Total:	413	100.0%
In your practice, when are radiographs usually taken for routine recall (asymptomatic) patients?		
Prior to the patient history and clinical examination	40	9.7%
Between the patient history and clinical examination	119	29.0%
After both the patient history and clinical examination	234	56.9%
Other	18	4.4%
Total:	411	100.0%

practitioners), 356 respondents were required for a question to which 50 per cent responded affirmatively (or negatively). Therefore, allowing for a non-response rate as high as 34 per cent, the questionnaire had to be distributed to an initial sample of 540 general dentists.

The sample frame used was the Royal College of Dental Surgeons (RCDS) of Ontario's list of members as of January 21, 1991. A systematic 10 per cent random sample of names was drawn. Identifiable dental specialists and dentists residing outside of Ontario were excluded from the sample. The resulting group of 559 general practitioners represented 10 per cent of all dentists licensed in Ontario, and 11 per cent of general practitioners.

The questionnaire and covering letter were mailed to the selected random sample on February 8, 1991. Using Dillman's survey approach,¹⁰ a reminder postcard was mailed to all dentists who had not replied by February 21, 1991. A third and final mailing of a questionnaire and a covering letter was sent to those dentists who had not replied by March 8, 1991, encouraging them to do so.

The returned questionnaires were edited and coded, and the data obtained were then entered into a personal computer using the Epi Info (V5) data-entry module screen. Data were subsequently analyzed using both Epi Info and SPSS/PC+.

Results

Details of the survey's sample and response rates are provided in Table I. Of the 452 questionnaires returned during a 10-week period following the initial mailing, 17 were unanswered and 22 came from noneligible responders (e.g. specialists). The remaining 413 questionnaires represented a 77 per cent response rate.

The characteristics of the responders are provided in Table II. They were predominantly male, private practitioners with 14 years (median) of clinical practice.

On further analysis, it was clear that the responders and non-responders were similar with regard to the year they graduated, the educational institutions they attended, and the population size of their practice locations. However, a higher proportion of women responded than men ($p < 0.05$).

As shown in Table III, a large major-

ity of dentists (85.8 per cent) do not have a written office policy and/or protocol for selecting patients for radiological examination. About one-quarter of the responding dentists reported that they always obtain recent radiographs from a new patient's previous dentist, while seven per cent rarely or never do so. The majority of dentists (56.9 per cent) report taking radiographs for asymptomatic recall patients after completing both a patient history and clinical examination. However, one in 10 do so prior to the patient history and clinical examination.

Ontario dentists rely primarily on their clinical experience to select patients for radiologic examination (54.4 per cent) (Table IV). Even where there are no obvious patient signs and symptoms to warrant radiologic examination, the majority (63.7 per cent) of dentists reported that they occasionally find pathology other than dental caries. Their diagnosis of interproximal caries is based primarily on radiographic findings (68.5 per cent).

The vast majority of dentists (98.5 per cent) alter their radiologic practices for pregnant patients, although 53.7 per cent state that there is no scientific rationale for doing so (Table V).

Table VI presents the responses to a question concerning continuing education. Almost 43 per cent of dentists report devoting 28 hours or more per year to continuing dental education. Attendance at continuing education courses in excess of 20 hours per year is positively associated ($p < 0.05$) with having a written office policy for selecting patients for radiological examination (Table VII).

The majority of Ontario general dentists (56 per cent) are opposed to explicit guidelines for radiologic examinations (Table VIII). However, a gender difference is apparent, since female dentists are more likely ($p < 0.001$) to approve of explicit guidelines for radiological examination than male dentists (Table IX).

Discussion

The response rate achieved in this survey of Ontario dentists was considered acceptable and responders and non-responders were similar in a number of characteristics. Information collected in this survey was self-reported data, which may give rise to problems of validity and reproducibility. However, every effort was made to reduce

TABLE IV

Distribution of Responses About Patient Selection, Caries Diagnosis, and Pathology

Question	Number	Per cent
Currently, the method you use to select patients for radiological examination is primarily based on:		
Training at dental school	53	12.9%
Clinical experience	224	54.4%
Both training and experience	56	13.6%
Office policy, manual, or protocol	26	6.3%
Published guidelines	39	9.4%
Other	14	3.4%
Total:	412	100.0%
What do you primarily base your diagnosis of interproximal caries on?		
Radiographic findings	283	68.5%
Clinical findings	25	6.1%
Both radiographic and clinical findings	105	25.4%
Total:	413	100.0%
In your practice, do you find radiographic evidence of pathology (other than dental caries) in the absence of patient signs and symptoms?		
Frequently	76	18.4%
Occasionally	263	63.7%
Rarely	73	17.7%
Never	1	0.2%
Total:	413	100.0%

bias in the covering letter and questionnaire, and to present a neutral perspective on the subject, so that dentists would be encouraged to freely respond with their true beliefs and practices.

The decision to prescribe radiographs for a patient should follow a history and examination.^{11,12} The majority (56.9 per cent) of dentists report doing so, although one in 10 dentists indicated that they take routine recall radiographs prior to the patient history and clinical examination.

Generally, Ontario dentists obtain or attempt to obtain recent radiographs of new patients from their previous dentists. This is consistent with the recommendations of the Royal College of Dental Surgeons of Ontario and the Canadian Dental Association.^{11,12}

The use of radiographs as the prime criteria to diagnose approximal caries by Ontario dentists (69 per cent) is somewhat higher than that reported for Danish dentists (60 per cent).¹³ Others have suggested that this reliance on radiographic findings alone may create a problem in that small changes in the angle of the X-ray path through a tooth can cause inaccuracies in assessing the depth of a lesion.¹⁴

The finding that the vast majority of dentists alter their radiographic practices for pregnant patients suggests a sensitivity to the public's radiation concerns. Interestingly, the majority opinion that there is no scientific rationale for actually doing so is supported by evidence recently published in U.S. guidelines.¹⁵

Overall, the majority (56 per cent) of dentists are opposed to explicit guidelines for radiological examinations, although this differs by gender, with 66 per cent of female dentists in favor of guidelines and 59 per cent of male dentists opposed. This division may, however, be confounded by age as the female responders were slightly younger than the male responders.

The belief that clinical judgement is the main criterion for radiological decision making may contribute to the opposition to guidelines. Indeed, in completing the questionnaire, a number of dentists expressed their objections to being forced to consider a "typical" patient when describing their radiological practices. They argued that all patients are unique, and that individual clinical judgement is required for each patient. In reference to this, Fletcher et al¹⁶ sug-

Table V

Distribution of Responses About Pregnant Patients and Radiographs

Questions	Number	Per cent
Do you alter your radiographic practices for a pregnant patient?		
Yes	405	98.5%
No	6	1.5%
Total:	411	100.0%
Currently, is there a scientific rationale for not taking a properly justified dental radiographic examination because of pregnancy?		
Yes	130	31.7%
No	220	53.7%
Do not know	60	14.6%
Total:	410	100.0%

Table VI

Distribution of Responses About Time Devoted to Continuing Dental Education

Question	Number	Per cent
Approximately how many hours a year do you devote to continuing dental education courses of all kinds?		
None	8	2.0%
1 to 6	28	6.8%
7 to 13	44	10.7%
14 to 20	76	18.5%
21 to 27	79	19.3%
28 or more	175	42.7%
Total:	410	100.0%

Table VII

Relationship Between Attendance at Continuing Education Courses and Having a Written Office Policy For Selecting Patients For Radiological Examination

Continuing Education (hours per year)	Written Office Policy		
	No	Yes	Total
0 to 20	90.8%	9.2%	152
21 and greater	82.6%	17.4%	253
$\chi^2 = 5.18 \quad p < 0.05$			

gested that because of the unique personal relationship between professionals and their patients, clinicians are often reluctant to group patients into categories of risk, diagnosis, or treatment.

Opposition to guidelines may also arise from concern over litigation with regards to radiological practices. This issue has been addressed by the American Dental Association. The legal opinion in the United States is that the in-

troduction of guidelines should not increase the malpractice risk for the vast majority of dentists.¹⁷

The positive association between having a written office policy on the selection of patients for radiographs and the extent of annual continuing education suggests that education may affect dentists' radiological practices. If true, this is consistent with the notion that education is one of six methods to change professional behavior.¹⁸ However, to be successful such education must be an ongoing process, and involve recognized leaders in the profession.

Dr. Swan is the Director of Dental Treatment Services 3 (DDTS 3) at the Canadian Forces Dental Services headquarters in Ottawa.

Dr. Lewis is a professor with the department of community dentistry and a researcher for the Community Dental Health Services research unit at the University of Toronto.

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A special thanks goes to the sample of Ontario dentists who took the time to complete and return the questionnaire.

Reprint requests to Dr. E.C.S. Swan, Director Dental Treatment Services, 3, National Defence headquarters, Ottawa, ON K1A 0K1

References

1. Ontario Ministry of Health. The Healing Arts Radiation Protection Guidelines, 1987.
2. Gelskey, D.E. and Baker, C.G. The ALARA concept: population exposures from X-rays in dentistry — as low as reasonably achievable? *J Can Dent Assoc* 50:402-403, 1984.
3. Sewerin, I. Annual number of intraoral radiographs in Denmark and other countries. *Commun Dent Oral Epidemiol* 14:123-125, 1986.
4. Shwartz, M., Pliskin, J.S., Grondahl, H.G. et al. *Benefits of alternative schedules for bitewing radiographs*. NCHSR research summary series, DHHS publication no. (PHS) 87-3407. Rockville, U.S. Department of Health and Human Services, 1987.
5. Reaven, E. Dental X-rays, for caries or cash? *Lancet* 2:609, 1983.
6. Wall, B.F. and Kendall, G.M. Collective doses and risks from dental radiology in Great Britain. *Br J Radiol* 56:511-516, 1983.
7. Johnston, D.W., Grainger, R.M. and Ryan, R.K. The decline of dental caries in Ontario school children. *J Can Dent Assoc* 52:411-417, 1986.
8. Swan, E.S.C. and Lewis, D.W. Ontario Den-

Table VIII

Distribution of Responses About Need for Guidelines

Question	Number	Per cent
Are explicit guidelines for radiological examination required in dentistry?		
Yes	181	44.3%
No	228	55.7%
Total:	409	100.0%

Table IX

Relationship Between Dentists' Gender and Need for Explicit Radiological Guidelines

Gender	Approval of Explicit Guidelines		
	No	Yes	Total
Female	34.0%	66.0%	53
Male	59.0%	41.0%	356

$\chi^2 = 11.71 \quad p < 0.001$

tists: 2. Bitewing utilization and restorative treatment decisions. *J Can Dent Assoc* 59:68-70, 1993.

9. Swan, E.S.C. and Lewis, D.W. Ontario Dentists: 3. Radiographs prescribed in general practice. *J Can Dent Assoc* 59:76-79, 1993.

10. Dillman, D.A. *Mail and Telephone Surveys*. New York, John Wiley and Sons, 1978.

11. Canadian Dental Association. Guidelines

for the control of radiation. *J Can Dent Assoc* 55:524, 1989.

12. Pharoah, M.J. X-rays: how often? The Royal College of Dental Surgeons of Ontario - *Dispatch* 4:1-8, 1990.

13. Bille, J. and Thylstrup, A. Radiographic diagnosis and clinical tissue changes in relation to treatment of approximal carious lesions. *Caries Res* 16:1-6, 1982.

14. Benn, D.K. and Watson, T.F. Correlation between film position, bitewing shadows, clinical pitfalls, and the histological size of approximal lesions. *Quintessence Int* 20:131-141, 1989.

15. Center for Devices and Radiological Health. *The selection of patients for X-ray examinations: dental radiographic examinations*. Rockville, HHS Publication (FDA) 88-8273, 1987.

16. Fletcher, R.H., Fletcher, S.W. and Wagner, E.H. *Clinical Epidemiology*, ed. 2. Baltimore, Williams & Wilkins, 1988.

17. Helfrick, J. Development of standards of care - the U.S. experience. *Br Dent J* 170:228-230, 1991.

18. Eisenberg, J.M. Physician utilization: the state of research about physicians' practice patterns. *Med Care* 23:461-483, 1985.

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Ontario Dentists: 2. Bitewing Utilization and Restorative Treatment Decisions

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ABSTRACT

Guidelines for the selection of patients requiring radiological examination have recently been published in Canada and the United States. The purpose of this paper, the second in a three-part series on the results of a questionnaire to Ontario general practitioners, is to compare bitewing use in Ontario against the U.S. guidelines. This questionnaire determined the frequency of recall bitewing examination for low and high caries risk patients, as well as the factors that influence the diagnostic and treatment decisions of the responding dentists. For example, 49 to 78 per cent of dentists order recall bitewings – in accordance with U.S. guidelines – for their patients in individual low caries risk categories. Similarly, 49 to 88 per cent of dentists order recall bitewings for individual patients in high caries risk categories, which is also consistent with the U.S. guidelines. However, across all low and high caries risk groups of patients, the percentages of dentists who followed the recommended guidelines were 34 and 15 per cent, respectively. The responding dentists' estimates of the length of time required for caries to progress through enamel are indirectly associated with the interval prescribed for recall bitewing examination.

SOMMAIRE

Au Canada et aux États-Unis, on vient de publier des directives pour déterminer quand on doit prendre des radiographies. Dans cet article, le deuxième d'une série de trois portant sur les résultats d'un sondage effectué en Ontario auprès des praticiens généralistes, on compare le nombre des radiographies 'bitewing' prises en Ontario à celui qui est recommandé aux États-Unis. Ainsi, on a demandé aux dentistes combien de ces radiographies, lors des rappels, ils prennent sur les patients

présentant de faibles risques de caries et sur ceux qui en présentent d'élevés. De plus, on leur a demandé quels sont les facteurs qu'ils prennent en considération pour le diagnostic et le plan de traitement.

Conformément aux directives américaines, de 49 à 78 p. cent des dentistes prennent des radiographies 'bitewing' lors des rappels, ce suivant chaque catégorie de patients à risques faibles. Ce taux varie de 49 à 88 p. cent suivant les catégories de patients à risques élevés, ce qui est aussi conforme aux recommandations américaines. Cependant, pour l'ensemble des patients à risques faibles et de ceux à risques élevés, les taux des dentistes qui suivent les directives recommandées sont de 34 et 15 pour cent respectivement. Les dentistes jugent que le temps que prend une carie pour percer l'émail correspond indirectement à l'intervalle recommandé pour les radiographies.

Introduction

During the 1970s and 1980s, dental radiology underwent much evaluation.¹⁻⁵ Within the last three years, guidelines for the selection of patients for radiographic examination have been published in Canada and the United States. CDA established general radiographic guidelines in 1988.⁶ These guidelines encourage dentists to exercise their professional judgement and, consequently, are highly subjective. More explicit guidelines were published in 1987 by the Center for Devices and Radiological Health (CDRH)⁷ in the U.S., which were subsequently adopted by the American Dental Association (ADA).⁸

CDRH's guidelines describe the type and frequency of radiographic examination for different types of patients in considerable detail. Patients are categorized by type of visit (new or recall), dental development (child, adolescent,

adult), and by risk category (low or high). We were interested to learn what criteria are used by general dental practitioners in Ontario to select patients for radiographic examination, and whether these selection criteria are similar to the recommended U.S. guidelines.

Radiological examinations are used as screening tests to discover disease in asymptomatic patients and as diagnostic tests to confirm clinical findings in symptomatic patients. Before performing any examination, the question of whether the examination has an acceptable probability of affecting patient management must be asked. This concept would exclude administratively routine radiological practices.

Bitewings radiographs (BW's) are indicated for the diagnosis, monitoring, and preventive treatment of caries.⁹⁻¹⁵ In 1925, Raper⁹ first suggested the need for periodic "interproximal roentgen-ray examination" to prevent the occurrence of "pulpless teeth." He suggested that such an examination be made every one to two years depending on the needs of the patient.

Several studies have investigated the reported frequency of recall bitewing examinations. The distribution of recall intervals for bitewings, as shown in Table I, makes it clear that there is a considerable variation among prescribing dentists in this area. To cite just one possible reason for this, new graduates are more likely to order radiographs at shorter intervals than experienced dentists.²⁰ In fact, the more frequently a patient is examined, the greater the likelihood that a false positive diagnosis will occur. The probability for a false positive diagnosis to occur is actually compounded with each examination.²¹ This problem is accentuated with the decreasing prevalence of disease, as there are more sound surfaces available for misdiagnoses and more problematic early lesions.^{22,23}

In addition to the inherent rate of

TABLE I**Studies Investigating Dentists' Recall Bitewing Interval**

Investigator(s)	Location (Year)	No Fixed Interval	Fixed Interval (months)				
			6	12	18	24	24+
Gibbs et al ¹⁶	Nashville (1977)	9%	5%	71%	-	-	15%
Stolurow & Moeller ¹⁷	Boston (1979)	15%	45%	40%	-	-	-
Kaugars et al ¹⁸	Virginia/Florida (1985)	43%	12%	41%	4%	-	-
Mileman & Espelid ¹⁹	Norway (1988)	N/A	9%	74%	-	16%	1%
	Holland (1988)	N/A	1%	17%	-	54%	28%

TABLE II**Reported Approximal Radiolucency Criteria for Restoration in an Asymptomatic Adult Patient**

Approximal Radiolucency	Number	Per cent
In Enamel	99	24.4%
At the DEJ	190	46.8%
In Dentin	117	28.8%
Total:	406	100.0%

TABLE III**Estimates by Dentists of Caries Progression Through the Enamel of Typical Patients**

Estimated Time in Months	Primary Dentition Number	Primary Dentition Per cent	Permanent Number	Permanent Dentition Per cent
Less than 6	84	22.4%	2	0.5%
6 to 11	212	56.5%	93	25.7%
12 to 23	73	19.5%	208	57.5%
24 and greater	6	1.6%	59	16.3%
Total:	375	100.0%	362	100.0%

false positives for radiographic tests, dentists also demonstrate great interobserver variation with regard to the radiographic diagnosis of caries.²⁴ This is a matter of concern, since 60 per cent of the treatment decisions about approximal caries may be based on radiographic examination alone.²⁵

The suggested interval for BWs ranges from three months to five or 10 years, depending on the patient.^{26,27} Shwartz et al²⁸ suggest that BWs could be scheduled every 30 to 36 months for asymptomatic patients with extensive

exposure to fluorides and no unrestored enamel lesions on their last radiographs. For persons with little exposure to fluorides, many early enamel lesions or at least one deep enamel lesion that has not been restored, radiographs should be performed every six to 12 months. Currently, the extent of caries on clinical examination and the number of restorations present are considered to be the best indicators of the need to schedule future BW examinations.^{29,30}

The value of periodic bitewing radiographs is related to their accuracy as a

diagnostic tool, the likelihood that new carious lesions will develop between intervals of radiographic exposure, the rate of progression of dental caries, and the diagnostic ability and the treatment philosophy of the prescribing dentist. In attempting to balance the risks of radiation against the pulpal damage that can result from deep caries, the practitioner may wish to consider the preferences of individual patients before prescribing bitewings.³¹ Radiographs that increase a clinician's confidence in his or her subsequent treatment decisions are valuable. However, if radiographs ordered to document clinical findings provide no concomitant increase in clinician confidence, they have no value.³²

The detection of early caries by radiological examination has created the problem of determining the best way to manage these lesions. Enamel lesions have the ability to remineralize.³³ The majority of approximal lesions progress slowly, with the lesion being confined to enamel for three to four years.³⁴ The evidence suggests that caries progression rates are decreasing³⁵ in the population of children (11-13 years) who have experienced a caries decline. Given these conditions, there is agreement that enamel radiolucencies should not be restored immediately.^{19,23,24}

Despite the declining caries rates, it remains unclear if BWs should still be used at relatively short intervals to monitor approximal enamel lesions and detect early occlusal caries, or if a longer interval is justified. An argument in favor of short intervals is the importance of making an early diagnosis. This allows preventive treatment to be carried out quickly, which may eliminate or avoid the need for operative treatment.¹⁵ On the other hand, it can also be argued that as caries progression rates appear to be slowing,³⁵ the interval between BWs can be increased. Paradoxically, both sides in this debate claim patient welfare as the basis for their contrasting suggestions.

Models have been developed to predict the likelihood that patients will develop new carious lesions between radiographs. For patients with no carious lesions or restorations at the initial examination, there is only a five per cent chance that BW radiographs will reveal the presence of approximal caries 18 months later.³⁰ Therefore, if a patient is willing to accept a five per cent risk that caries will reach the inner half of the dentin before detection, X-rays should be performed every 30 months in a

fluoridated community and every 18 months in a non-fluoridated community.³⁶

It is unclear if the publication of guidelines has changed the radiologic practises of dentists. To date, the only report that attempts to answer this question is by Atchinson and White,³⁷ who compared the recall radiographs prescribed by dentists in California to the CDRH guidelines. In a mail survey of dentists, they found that radiographs were ordered more frequently than the guidelines suggested. However, their survey was conducted shortly after the CDRH guidelines were released, and at about the same time (1988) as the ADA approved them. The impact of the CDRH guidelines is therefore uncertain.

This paper reports on the use of bitewing radiographs by Ontario general practitioners and the factors that influence their decisions to do so.

Methods

A mail questionnaire was distributed to a sample of Ontario general dentists to gather information about their radiological practices and opinions. The methods used to select the sample, mail the questionnaire and analyze the data are described in the first paper in this series.³⁸

Results

Nearly one-quarter (24 per cent) of the dentists surveyed reported treating approximal caries restoratively when the radiolucency is in enamel (see Table II). The respondents' estimates of the rate of caries progression through enamel are provided in Table III. The majority of dentists reported that caries moves from the outer enamel surface to the dentinoenamel junction (DEJ) in six to 11 months in the primary dentition (57 per cent) and from 12 to 23 months in the permanent dentition (58 per cent).

For reference purposes, the CDRH guidelines⁷ for recall BW intervals are provided in Table IV. The distributions of the responses to the questions concerning recall BW frequency by patient risk group are presented in Tables V to VII. While the median recall BW intervals reported for low- and high-risk caries patients are within the recommended intervals, the variation in responses, as seen in the ranges, is considerable (Table V).

The respondents' BW recall intervals for low- and high-risk caries patients are compared to the CDRH guidelines in Tables VI and VII, respectively. There

TABLE IV

CDRH Guidelines for Recall Bitewing Interval in Months

Risk Category	Child with primary dentition	Child with transitional dentition	Adolescent	Adult
High Risk: Clinical caries or high-risk factors for caries	6	6	6-12	12-18
Low Risk: No clinical caries and no high-risk factors for caries	12-24 *	12-24	18-36	24-36

* BW examination if proximal surfaces of primary teeth cannot be visualized.

TABLE V

Reported Recall Bitewing Interval in Months (Median and Range)

Risk Category	Child with primary dentition	Child with transitional dentition	Adolescent	Adult
High Risk: Clinical caries or high-risk factors for caries	6 * 3-36	6 3-36	12 6-30	12 6-36
Low Risk: No clinical caries and no high-risk factors for caries	12 6-36	12 6-36	18 6-36	24 6-36

*The upper figure is the median and the lower is the range.

TABLE VI

Recall Bitewing Intervals Reported by Dentists for Low Caries Risk Patients (Per Cent Distribution)

Recall BW Interval	Child with primary dentition	Child with transitional dentition	Adolescent	Adult
Shorter than CDRH guidelines.	7.4	9.6	47.5	46.0
As per CDRH guidelines.	76.8	77.8	49.3	50.4
Longer than CDRH guidelines.	4.9	5.2	0.0	0.0
No fixed interval.	10.9	7.4	3.2	3.6
Total:	100.0%	100.0%	100.0%	100.0%

is a tendency for adults and low caries risk adolescents to be X-rayed at intervals that are shorter than recommended. In contrast, high caries risk

children (both primary and transitional dentition) are subjected to longer than recommended intervals.

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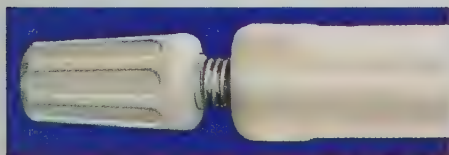
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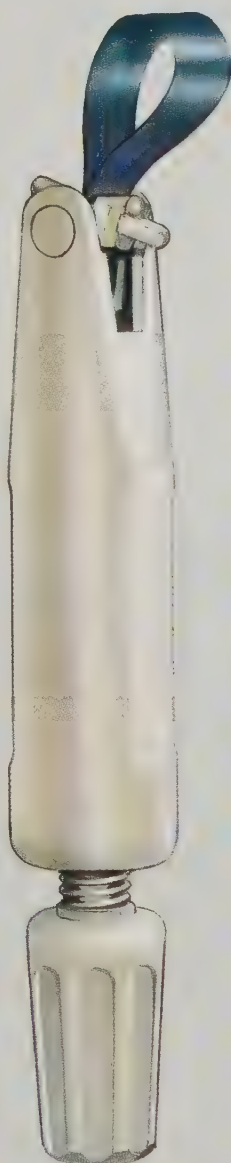
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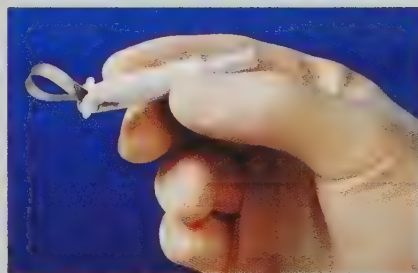


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TABLE VII

Recall Bitewing Intervals Reported by Dentists for High Caries Risk Patients (Per Cent Distribution)

Recall BW Interval	Child with primary dentition	Child with transitional dentition	Adolescent	Adult
Shorter than CDRH guidelines.	0.2	0.2	0.0	36.9
As per CDRH guidelines.	55.0	48.9	88.1	54.9
Longer than CDRH guidelines.	41.6	48.2	10.7	6.6
No fixed interval.	3.2	2.7	1.2	1.7
Total:	100.0%	100.0%	100.0%	100.0%

TABLE VIII

Recall Bitewing Utilization of 347 Dentists for Low Caries Risk Patients

Classification of utilization relative to CDRH Guidelines	Number	Per cent
Consistent overutilization	23	6.6
Variable overutilization	180	51.9
Recommended utilization	118	34.0
Variable underutilization	22	6.3
Consistent underutilization	0	0.0
Erratic utilization	4	1.2
Total:	347	100.0%

TABLE IX

Recall Bitewing Utilization of 391 Dentists for High Caries Risk Patients

Classification of utilization relative to CDRH Guidelines	Number	Per cent
Consistent overutilization	0	0.0
Variable overutilization	133	34.0
Recommended utilization	59	15.1
Variable underutilization	167	42.7
Consistent underutilization	16	4.1
Erratic utilization	16	4.1
Total:	391	100.0%

analysis, in Tables VIII and IX dentists have been classified by their utilization of recall BWs, across all patient groups (child, adolescent, adult), for low and high caries risk patients, respectively, relative to the CDRH guidelines. "Rec-

ommended utilizers," as labelled in Tables VIII and IX, prescribe X-rays for *all* patient categories (child with primary dentition, child with permanent dentition, adolescent, and adult) in accordance with the CDRH guidelines. "Con-

sistent overutilizers" and "consistent underutilizers" prescribe X-rays for *all* patient categories at shorter and longer intervals, respectively. "Variable overutilizers" and "variable underutilizers" prescribe X-rays for *one or more* patient categories at shorter and longer intervals, respectively. "Erratic utilizers" prescribe X-rays at *both* shorter and longer than recommended intervals.

Based on this classification, 34.0 per cent of respondents use radiographs according to the CDRH guidelines for all four low-risk patient types, whereas 51.9 per cent demonstrate variable overutilization of recall BWs for low caries risk patients (Table VIII). Both of these percentages are much lower (roughly one-half) for the four types of high caries risk patients (Table IX). For high risk patients, variable underutilization is greatest (42.7 per cent).

The responding dentists' estimates of the length of time required for caries to progress from the outer enamel surface to the DEJ, dichotomized at 12 months, are indirectly ($p < 0.01$) associated with the interval prescribed for recall BW examination. Tables X and XI illustrate this for a high caries risk child and low caries risk adult, respectively. In each case, dentists who believe that caries progress more rapidly tend to have shorter BW recall intervals. The only exception to this association was with low caries risk adult patients (not tabled, Fisher's exact test $p > 0.1$).

The point at which dentists treat approximal radiolucencies restoratively is associated ($p < 0.01$) with their estimates of the rate of caries progression through enamel. Relatively, more dentists (37 per cent) who estimate caries progression through enamel to be less than 12 months than those who estimate caries progression to be greater than 12 months (20 per cent) report the restoration of enamel radiolucencies (Table XII).

No statistically significant associations were found between the prescribed BW recall intervals for patients and the fluoridation status of their community or the restorative criteria used for approximal caries.

Discussion

At least two factors may have influenced the responses to this survey. Prior to the mailing of the questionnaire, two articles appeared in the Canadian dental literature on radiograph use. Stephens and Kogon³⁹ critically evaluated the CDRH guidelines, and the Royal College

TABLE X

Relationship Between Estimates of Caries Progression Through Primary Enamel and Recall BW Intervals for Children With a Primary Dentition at High Caries Risk

Caries Progression (months)	Recall BW Interval		Total
	6 Months	Greater than 6 Months	
1 to 11	60.2%	39.8%	284
12 to 24+	41.5%	58.5%	77
$X^2 = 8.56$ $p < 0.01$			

TABLE XI

Relationship Between Estimates of Caries Progression Through Permanent Enamel and Recall BW Intervals for Adults at Low Caries Risk

Caries Progression (months)	Recall BW Interval		Total
	Less than 24 Months	24 to 36 Months	
1 to 11	59.0%	41.0%	78
12 to 24+	30.7%	69.3%	225
$X^2 = 19.71$ $p < 0.001$			

TABLE XII

Relationship Between Estimates of Caries Progression Through Permanent Enamel and Reported Criteria to Restore an Approximal Radiolucency

Caries Progression (months)	Reported Criteria to Restore an Approximal Radiolucency			Total
	In Enamel	At the DEJ	In Dentin	
1 to 11	37.4%	38.5%	24.1%	91
12 to 24+	20.4%	48.7%	30.9%	265
$X^2 = 10.50$ $p < 0.01$				

of Dental Surgeons of Ontario (RCDS) published an article on radiograph frequency.²⁷ Both publications were received by all licensed dentists in Ontario, and as such may have had an historical effect on the self-reported responses of this survey. Secondly, this study did not investigate the influence of dental insurance on radiographic use, since its purpose was to determine the

dentists' use of radiographs without financial constraints. Undoubtedly, in practice the use of some X-rays is related to insurance coverage.

The finding that nearly one-quarter of the dentists surveyed restore approximal radiolucencies that are confined to enamel is also of concern. This appears to be due, in part, to an underestimation by dentists of the time re-

quired for caries to progress through the enamel of their "typical" patients. Recent studies report that the majority of approximal caries progresses slowly, and large numbers of lesions remain confined to the enamel.^{34,35} In a Danish population, the reported cavitation rate for radiographic lesions in enamel is only 19 per cent, and even this low percentage appears to be following a downward trend.⁴⁰

The association between estimates of caries progression through enamel and recall BW recall intervals (Table XI) and the restorative criteria used for approximal lesions (Table XII), suggest that educating dentists about the actual slow progress of most lesions may be helpful. Providing dentists with accurate estimates of enamel caries progression in their community may positively influence the frequency with which BWs are taken and the depth of caries when restorations are placed.

With increasing numbers of caries-free (low caries risk) children in Ontario⁴¹ and the inherent risks of radiographs as diagnostic tests, dentists should selectively prescribe BWs. ADA's recommended BW interval, published by CDRH, is dependent on patient type and risk category. Although dentists do change their BW interval for different patients and varying caries risk (Table V), some 37 to 46 per cent of all adults and 48 per cent of low caries risk adolescents receive BWs more frequently than recommended (Tables VI and VII).

For dentists to be classified as "recommended utilizers" of recall BWs, they were required to adjust their BW interval for the eight combinations of patient types and risk categories presented to them. Despite these changes in BW intervals, as discussed above, a minority of dentists conform to the CDRH guidelines for low (34 per cent) and high caries risk (15 per cent) groups of patients (Table VIII and IX). The overutilization (both consistent and variable) of recall BWs by almost 59 per cent of dentists for all low caries risk patients (Table VIII) may expose large segments of the population to unnecessary radiation. It also places these patients at risk of unnecessary restorative care, since the more frequently patients are examined, the greater the chances that false positive diagnoses will occur.

Somewhat surprisingly, there does not appear to be a statistically significant association between reported recall BW intervals and community fluorida-

tion status, or the restorative criteria for approximal caries. However, similar findings have been reported elsewhere. Matteson et al⁴² found that nearly three-quarters of North Carolina's dentists selected a BW interval regardless of the patient's fluoride exposure. In a study of Dutch and Norwegian dentists, no significant relationship existed between restorative decision-making criteria and the prescribing interval for BWs at recall.¹⁹

The adoption of radiological guidelines such as those produced by CDRH provides dentists with a framework on which to base their selection of patients for bitewing examination. This should result not only in a more standardized approach to the selection of patients for radiological examination, but also in greater public confidence in the profession's response to the sensitive area of exposure to radiation. ■

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Dr. Lewis is a professor with the department of community dentistry and a researcher for the Community Dental Health Services research unit at the University of Toronto.

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References

1. Bureau of Radiological Health. National Conference on Referral Criteria for X-Ray Examinations. Rockville, HEW Publication (FDA) 79-8083, 1979.
2. Bureau of Radiological Health. Technology Assessment Forum on Dental Radiology. Rockville, HHS Publication (FDA) 82-8197, 1982.
3. Health and Welfare Canada. Oral Radiological Services: Report of the Working Group. Ottawa, National Health and Welfare, 1979.
4. Brown, R.F., Shaver, J.W. and Lamel, D.A. *The Selection of Patients for X-Ray Examinations*. Rockville, HEW Publication (FDA) 80-8104, 1980.
5. Manny, E.F., Carlson, K.C., McClean, P.M. et al. *An Overview of Dental Radiology*. Rockville, National Center for Health Care Technology, 1980.
6. Canadian Dental Association, Guidelines for the control of radiation. *J Can Dent Assoc* 55:524, 1989.
7. Center for Devices and Radiological Health, The Selection of Patients for X-Ray Examinations: Dental Radiographic Examinations. Rockville, HHS Publication FDA 88-8273, 1987.
8. Council on Dental Materials, Instruments, and Equipment. Recommendations in radiographic practices: an update, 1988. *JADA* 118:115-117, 1989.
9. Raper, H.R. Practical clinical preventive dentistry based upon periodic roentgen-ray examinations. *JADA* 12:1084-1100, 1925.
10. Backer Dirks, O., Van Amerongen, J. and Winkler, K.C. A reproducible method for caries evaluation. *J Dent Res* 30:346-359, 1951.
11. Stephens, R.G., Kogon, S.L. and Reid, J.A. A comparison of panorex and intraoral surveys for routine dental radiology. *J Can Dent Assoc* 43:281-286, 1977.
12. Stephens, R.G., Kogon, S.L., Wainwright, R.J. et al. Information yield from routine bitewing radiographs for young adults. *J Can Dent Assoc* 47:247-252, 1981.
13. Stephens, R.G., Kogon, S.L. and Reid, J.A. Non-invasive therapy for proximal enamel caries. An expanded role for bitewing radiographs. *J Can Dent Assoc* 53:619-622, 1987.
14. Douglass, C.W., Valachovic, R.W., Wijesinha, A. et al. Clinical efficacy of dental radiology in the detection of dental caries and periodontal diseases. *Oral Surg* 62:330-339, 1986.
15. Kidd, E.A.M. and Pitts, N.B. A reappraisal of the value of the bitewing radiograph in the diagnosis of posterior approximal caries. *Br Dent J* 169:195-200, 1990.
16. Gibbs, S.J., Crabtree, C.L. and Johnson, O.J. An educational approach to voluntary improvement of dental radiological practices. *JADA* 95:562-569, 1977.
17. Stolurow, K.A. and Moeller, D.W. Dental X-ray use in Boston. *Am J Pub Health* 69:709-710, 1979.
18. Kaugars, G.E., Broga, D.W. and Collett, W.K. Dental radiologic survey of Virginia and Florida. *Oral Surg* 60:225-229, 1985.
19. Mileman, P.A. and Espelid, I. Decisions on restorative treatment and recall intervals based on bitewing radiographs. A comparison between national surveys of Dutch and Norwegian practitioners. *Commun Dent Health* 5:273-284, 1988.
20. Stanek, E.J., Fitzgerald, M., Ken, R.R. et al. The relationship between the dentist's year of graduation and ordering of bitewing radiographs. *JADA* 113:42-46, 1986.
21. Tulloch, J.F.C., Antczak-Bouckoms, A., Berkey, C.S. et al. Selecting the optimal threshold for the radiographic diagnosis of interproximal caries. *J Dent Educ* 52:630-636, 1988.
22. Cale, A.E. and Kaugars, G.E. Reduction in bitewing radiographs for patients with no clinical signs of dental caries. *Gen Dent* 35:292-294, 1987.
23. Nuttall, N.M. and Pitts, N.B. Restorative treatment thresholds reported to be used by dentists in Scotland. *Br Dent J* 169:119-126, 1990.
24. Espelid, I. Radiographic diagnoses and treatment decisions on approximal caries. *Commun Dent Oral Epidemiol* 14:265-270, 1986.
25. Bille, J. and Thylstrup, A. Radiographic diagnosis and clinical tissue changes in relation to treatment of approximal carious lesions. *Caries Res* 16:1-6, 1982.
26. Fireman, S.M. Determining a proper frequency for X-ray examinations for dental caries. *Oral Health* 73:11, 1983.
27. Pharoah, M.J. X-rays: how often? The Royal College of Dental Surgeons of Ontario - *Dispatch* 4:1-8, 1990.
28. Shwartz, M., Pliskin, J.S., Grondahl, H.G. et al. The frequency of bitewing radiographs. *Oral Surg* 61:300-305, 1986.
29. Douglass, C.W., Valachovic, R.W., Berkey, C.S. et al. Clinical indicators of radiographically detectable dental diseases in the adult patient. *Oral Surg* 65:474-482, 1988.
30. White, S.C., Kaffe, I. and Gornbein, J.A. Prediction of efficacy of bitewing radiographs for caries detection. *Oral Surg* 69:506-513, 1990.
31. Pliskin, J.S., Shwartz, M., Grondahl, H.G. et al. Incorporating individual patient preferences in scheduling bitewing radiographs. *Meth Inform Med* 24:213-217, 1985.
32. Atchinson, K.A., Luke, L.S. and White, S.C. Contribution of pretreatment radiographs to orthodontists' decision making. *Oral Surg* 71:238-245, 1991.
33. Silverstone, L.M. Remineralization and enamel caries: new concepts. *Dent Update* 10:261-273, 1983.
34. Pitts, N.B. Monitoring of caries progression in permanent and primary posterior approximal enamel by bitewing radiography. *Commun Dent Oral Epidemiol* 11:228-235, 1983.
35. Ekanayake, L.S. and Sheiham, A. Reducing rates of progression of dental caries in British schoolchildren. A study using bitewing radiographs. *Br Dent J* 163:265-269, 1987.
36. Shwartz, M., Pliskin, J.S., Grondahl, H.G. et al. *Benefits of alternative schedules for bitewing radiographs*, NCHSR research summary series. Rockville, DHHS publication no. (PHS) 87-3407. U.S. Department of Health and Human Services, 1987.
37. Atchinson, K.A. and White, S.C. Comparison of recall radiographs to the CDRH Guidelines. *J Dent Res* 68:325, 1989 (abstract).
38. Swan, E.S.C. and Lewis, D.W. Ontario Dentists: 1. Radiologic practices and opinions. *J Can Dent Assoc* 59:62-67, 1993.
39. Stephens, R.G. and Kogon, S.L. New U.S. guidelines for prescribing dental radiographs - a critical review. *J Can Dent Assoc* 56:1019-1024, 1990.
40. Thylstrup, A., Bille, J. and Qvist, V. Radiographic and observed tissue changes in approximal carious lesions at the time of operative treatment. *Caries Res* 20:75-84, 1986.
41. Johnston, D.W., Grainger, R.M. and Ryan, R.K. The decline of dental caries in Ontario school children. *J Can Dent Assoc* 52:411-417, 1986.
42. Matteson, S.R., Morrison, W.S., Stanek, E.J. and Phillips, C. A survey of radiographs obtained at the initial dental examination and patient selection criteria for bitewings at recall. *JADA* 107:586-590, 1983.

Ontario Dentists: 3. Radiographs Prescribed In General Practice

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ABSTRACT

In February 1991, a mail survey was used to poll a sample consisting of about 10 per cent of Ontario's general dentists. The data obtained provided information about the radiographs prescribed by dentists for five different patient types, which were described to the respondents. The per cent agreement between the radiographic procedures prescribed by Ontario dentists and the ADA-approved Center for Devices and Radiological Health (CDRH) guidelines ranged from three per cent to 79 per cent, depending on patient type and disease risk. For each patient and risk type, there was considerable variation in the radiographs prescribed.

SOMMAIRE

En février 1991, on a effectué par courrier un sondage auprès d'environ 10 p. cent des dentistes généralistes de l'Ontario afin de recueillir des données sur les radiographies qu'ils prennent pour cinq catégories différentes de patients. Suivant chaque catégorie de patients et chaque risque de maladie, le pourcentage des procédures radiologiques recommandé par les dentistes de l'Ontario et l'ADA – qui a agréé les directives du Center for Devices and Radiological Health des États-Unis – peut varier de 3 à 79 p. cent et, effectivement, le nombre des radiographies prises varie grandement.

Introduction

As is the case for most dental procedures, there are variations in the radiographic practises of individual dentists.¹ For example, Lewis et al² re-

ported that there was great variability in the number of radiographs that dentists provided to pre-school children in Ontario many years ago, even though there was no cost to the children's parents for radiographs at that time. Variations in the provision of health care services still exist today, even when those services are provided to the same person. This may be due to professional uncertainty and/or a lack of consensus on the most appropriate procedure.^{3,4} Other factors, such as the number of years that a health care provider has been in practice since his or her graduation, may also

influence the use of certain procedures.⁵

When variations in procedures are associated with different patient outcomes – or equivalent outcomes but significant differences in resource use – questions arise about the quality, appropriateness, and cost-effectiveness of the services provided. Therefore, it is important to document this variability, and try to understand the reasons for it, before presenting suggestions on the need for change and the factors that are likely to be most susceptible to change. The development of a clinical agreement reached by consensus is considered to

TABLE I

Radiographs Prescribed by 413 Dentists for the Initial Appointment of an Asymptomatic 3 Year Old with Open Posterior Contacts

Radiographs Prescribed	Number of Dentists	Per cent
None **	324	78.6
Occlusal(s)	20	4.9
Periapical(s)	17	4.1
Bitewings	14	3.4
Bitewings + Periapical(s)	11	2.7
Panoramic	10	2.4
Bitewings + Occlusal(s)	5	1.2
Full Mouth Survey	3	0.7
Periapical(s) + Occlusal(s)	3	0.7
Panoramic + Occlusal(s)	1	0.2
Bitewings + Panoramic	1	0.2
Bitewings + Panoramic + Occlusal(s)	1	0.2
Bitewings + Panoramic + Periapical(s)	1	0.2
Bitewings + Other	1	0.2
Total:	413	100.0%

** As recommended in CDRH Guidelines

TABLE II

Radiographs Prescribed by 413 Dentists for the Initial Appointment of an Asymptomatic 39 Year Old with Signs of Generalized Periodontal Disease.

Radiographs Prescribed	Number of Dentists	Per cent
None	0	0
Full Mouth Survey **	195	47.2
Bitewings + Periapical(s)	70	16.9
Bitewings + Periapical(s) + Panoramic	69	16.7
Bitewings + Panoramic	35	8.5
Full Mouth Survey + Panoramic	17	4.1
Periapical(s)	8	1.9
Bitewings	7	1.7
Periapicals + Panoramic	5	1.2
Panoramic	5	1.2
Other	2	0.5
Total	413	100.0%

** As recommended in CDRH Guidelines

be essential in maintaining the public's confidence in the health care professions.⁶

In general dental practice, radiological examinations are used primarily to diagnose caries,⁷ but also periodontal disease, periapical disease, and occult disease, and to assess growth and development. These examinations vary in the extent to which they assist diagnostic decisions.

Several guidelines have recently been published to assist clinicians in the selection of patients for radiological examination. Both the Canadian Dental Association and the Royal College of Dental Surgeons of Ontario have published guidelines designed to protect the patient from the inappropriate use of radiographs. These radiographs are very general in nature and rely primarily on the professional judgement of the dentist.^{8,9} In 1989, the American Dental Association's council on dental materials, instruments, and equipment¹⁰ adopted the radiographic selection criteria developed by the Center for Devices and Radiological Health (CDRH).¹¹ Even though there has been some criticism of these guidelines,¹² they describe in considerable detail the type and frequency of radiographic examinations

that should be used for different types of patients. Patients are categorized by type of visit (new or recall), dental development (child, adolescent, adult), and by risk category (low or high).

This paper, the final instalment in a three-part series on the radiological

practices and opinions of Ontario dentists, examines the prescription of radiographs by Ontario dentists relative to the recent CDRH guidelines. It should be noted that these American guidelines are not officially sanctioned in Ontario.

Methods

As part of a mail questionnaire on their radiological practices and opinions,¹³ Ontario dentists were presented with verbal descriptions of five patients. They were then asked to indicate what radiographs they would prescribe for each patient. To allow subsequent comparisons, the five patient descriptions used in the study were similar to those contained in the CDRH publication.

Results

The X-rays prescribed by the survey respondents for various patient types and situations are presented in **Tables I to V**. **Table VI** summarizes the level of agreement between these responses and the CDRH guidelines. This agreement ranges from three to 79 per cent.

Discussion

In prescribing radiographs based on patient descriptions, the majority of dentists either met CDRH guidelines or prescribed similar radiographs (**Tables I - V**). However, the dentists usually varied greatly in the types and combinations of X-rays they prescribed for

TABLE III

Radiographs Prescribed by 413 Dentists for the Initial Appointment of an Asymptomatic, Edentulous, 60 Year Old Requesting a New Set of Dentures.

Radiographs Prescribed	Number of Dentists	Per cent
None	116	28.1
Panoramic **	233	56.4
Periapical(s)	46	11.1
Periapical(s) + Panoramic	8	1.9
Panoramic + Occlusal(s)	6	1.5
Occlusal(s)	3	0.7
Bitewings + Periapical(s)	1	0.2
Total:	413	100.0%

** As recommended in CDRH Guidelines

TABLE IV

Radiographs Prescribed by 413 Dentists for the 6 Month Recall Appointment of an Asymptomatic 7 Year Old Presenting with Caries and a Newly Erupted Mandibular Permanent Incisor.

Radiographs Prescribed	Number of Dentists	Per cent
None	15	3.6
Bitewings	304	73.6
Bitewings + Periapical(s)	58	14.0
Bitewings + Occlusal(s)	14	3.4
Bitewings + Panoramic **	11	2.7
Periapical(s)	5	1.2
Full Mouth Survey	3	0.7
Bitewings + Periapical(s) + Occlusal(s) **	2	0.5
Panoramic	1	0.2
Total:	413	100.0%

** As recommended in CDRH Guidelines

TABLE V

Radiographs Prescribed by 413 Dentists for the 12 Month Recall Appointment of an Asymptomatic 36 Year Old with No Clinical Evidence of New Caries or Periodontal Disease.

Radiographs Prescribed	Number of Dentists	Per cent
None **	225	54.5
Bitewings	168	40.7
Bitewings + Periapical(s)	10	2.4
Bitewings + Panoramic	4	1.0
Periapical(s)	2	0.5
Periapical(s) + Panoramic	1	0.2
Other	3	0.7
Total:	413	100.0%

TABLE VI

Percentage of Dentists Prescribing X-rays as Recommended in the CDRH Guidelines for Selected Patients

Age (yrs.)	Dentition	Type of Visit	% Agreement with CDRH Guidelines	Response Patterns**
3	Primary with open posterior contacts	Initial	78.6	14
39	Permanent	Initial	47.2	10
60	Edentulous	Initial	56.4	7
7	Transitional	Recall	3.2	9
36	Permanent	Recall	54.5	7

** Response patterns represent the number of single or combined radiographic types prescribed by respondents. These in effect equal the number of data rows in Tables I to V.

each patient type (Table VI).

For the initial appointment of a caries-free child with a spaced primary dentition (Table I), more Ontario dentists (79 per cent) conformed to the guidelines by *not* ordering radiographs than did either general (58 per cent) or pediatric (49 per cent) dentists¹⁴ in the U.S. (It should be noted that the U.S. survey took place prior to the publication of the guidelines.) However, for the six-month recall appointment of an asymptomatic seven year old presenting with caries and a newly erupted mandibular permanent incisor (Table IV), the vast majority of dentists appear to have focused on caries assessment, omitting the evaluation of the growth and development of the patient as recommended by CDRH. As a result, only three per cent of dentists met the published guidelines in this case. This may indicate an overemphasis on caries diagnosis at the expense of evaluating growth and development.

While only 47.2 per cent of dentists prescribed the recommended full mouth survey (FMS) for the initial appointment of a 39-year-old patient with signs of generalized periodontal disease (Table II), most of the remaining dentists ordered additional X-rays to supplement the standard bitewings (BW's). In many cases, this combination may approximate a FMS and indicates an appreciation of the patient's condition.

There is a clear difference of opinion by Ontario dentists about the requirement to X-ray an asymptomatic, edentulous 60-year-old patient who is requesting new dentures. The CDRH recommends either a FMS or a panoramic examination for such a patient. While the majority (56.4 per cent) of Ontario dentists met this guideline by prescribing a panoramic examination, more than one-quarter (28.1 per cent) of them chose not to take a radiograph. Interestingly, this decision is supported by a recent study of patients requesting new dentures, which discourages the routine use of radiographs in such patients.¹⁵ The study's authors suggest that a thorough history and clinical examination will assist dentists in selecting those patients who would benefit most from X-ray examination.

The vast majority (95.2 per cent) of dentists either met the CDRH guidelines of no radiographs (54.5 per cent) or prescribed BW's (40.7 per cent) for the healthy adult recall patient (Table V).

Although agreement relative to the CDRH guidelines was generally good,

the residual disagreement and variation in the number and type of radiographs prescribed by Ontario dentists might be reduced by the application of detailed radiological guidelines. ■

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Dr. Lewis is a professor with the department of community dentistry and is a researcher for the Community Dental Health Services research unit at the University of Toronto.

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A special thanks goes to the sample of Ontario dentists who took the time to complete and return the questionnaire.

Reprint requests to Dr. E.S.C. Swan, Director, Dental Treatment Services, National Defence Headquarters, Ottawa, Ont. K1A 0K2.

References

1. Grembowski, D., Milgrom, P. and Fiset, L.

Variation in dentist service rates in a homogeneous patient population. *J Pub Health Dent* 50:235-243, 1990.

2. Lewis, D.W., Magid, S.C. and Jarrett, M.E. (1975) The Waterloo time, cost, and manpower study of incremental dental care for preschool children. Waterloo Regional Health Unit, Kitchner, Ontario.

3. Wennberg, J.E. The paradox of appropriate care. *JAMA* 258:2568-2569, 1987.

4. Wennberg, J.E., Barnes, B.A. and Zubkoff, M. Professional uncertainty and the problem of supplier-induced demand. *Soc Sci Med* 16:811-824, 1982.

5. Childs, A.W. and Hunter, E.D. Non-medical factors influencing use of diagnostic X-ray by physicians. *Med Care* 10:323-325, 1972.

6. Scott, G.W.S. Guidelines are essential for quality assurance in practice. *CMAJ* 143:473-474, 1990.

7. Osman, F., Scully, C., Dowell, T.B. et al. Reasons for taking radiographs in general dental practice. *Commun Dent Oral Epidemiol* 14:146-147, 1986.

8. Canadian Dental Association, Guidelines for the control of radiation. *J Can Dent Assoc* 55:524, 1989.

9. Pharoah, M.J. X-rays: how often? The Royal College of Dental Surgeons of Ontario. *Dispatch* 4:1-8, 1990.

10. Council on Dental Materials, Instruments, and Equipment. Recommendations in radio-

graphic practices: an update, 1988. *JADA* 118:115-117, 1989.

11. Center for Devices and Radiological Health. *The selection of patients for X-ray examinations: dental radiographic examinations*. Rockville, HHS Publication (FDA) 88-8273, 1987.

12. Stephens, R.G. and Kogon, S.L. New U.S. guidelines for prescribing dental radiographs—a critical review. *J Can Dent Assoc* 56:1019-1024, 1990.

13. Swan, E.S.C. and Lewis, D.W. Ontario dentists: 1. Radiological practices and opinions. *J Can Dent Assoc* 59:62-67, 1993

14. McKnight-Hanes, C., Myers, D.R., Dushku, J.C. et al. Radiographic recommendations for the primary dentition: comparison of general dentists and pediatric dentists. *Pediatr Dent* 12:212-216, 1990.

15. Lyman, S. and Boucher, L.J. Radiographic examination of edentulous mouths. *J Prosthet Dent* 64:180-182, 1990.



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Product Summary

EFFECTIVE, NON-NARCOTIC

IDARAC 400 mg
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HELPS AVOID THE BELLYACHING OVER PAIN¹

200 mg and 400 mg tablets

THERAPEUTIC CLASSIFICATION: Analgesic.

ACTIONS:

IDARAC (floctafenine) is an anthranilic acid derivative which has analgesic and anti-inflammatory properties. The analgesic activity is comparable to that of other mild analgesics in the relief of acute pain. Floctafenine has been shown to inhibit *in vitro* biosynthesis of prostaglandins PGE₂ and PGF_{2α}. Gastrointestinal bleeding determined by daily fecal blood loss, was shown in one clinical trial to be approximately 1.2 mL after 1600 mg/day of floctafenine compared to 10.4 mL after 2400 mg/day of acetylsalicylic acid. In normal volunteers, IDARAC was well absorbed after oral administration and peak plasma levels were attained 1-2 hours after administration and declined in a biphasic manner, with an initial (α phase) half-life of approximately 1 hour and a later (β phase) half-life of approximately 8 hours. Floctafenine and its metabolites do not accumulate following oral administration of multiple doses. After oral and intravenous administration of ¹⁴C-labelled IDARAC, urinary excretion accounted for 40% and fecal and biliary excretion accounted for 60% of the recovered radioactivity. The main urinary metabolites are floctafenic acid and its conjugate with minimal amounts of free floctafenine.

INDICATIONS:

IDARAC (floctafenine) is indicated for short-term use in acute pain of mild and moderate severity.

CONTRAINDICATIONS:

IDARAC (floctafenine) is contraindicated in patients with peptic ulcer or any other active inflammatory disease of the gastrointestinal tract, and in patients who have demonstrated a hypersensitivity to the drug.

WARNINGS:

Use in Pregnancy: The use of IDARAC (floctafenine) in

women of child-bearing potential requires that the likely benefit of the drug be weighed against the possible risk to the mother and fetus. Since there is no information on the excretion of floctafenine in breast milk, use of the drug in women who are nursing is not recommended.

Use in Children: The safety and efficacy of IDARAC in children have not been established and therefore its use in this age group is not recommended. The safety and efficacy of long-term use of IDARAC have not been established.

PRECAUTIONS:

IDARAC (floctafenine) should be used with caution in patients with impaired renal function. In clinical trials with IDARAC dysuria, without apparent changes in renal function, was reported. The incidence of dysuria was greater in males than in females and occurred primarily in the first morning voiding. It has not been established whether dysuria is related to dose and/or duration of drug administration. Patients taking anticoagulant medication may be given IDARAC with caution. Alterations in prothrombin time have been observed only in clinical trials where the administration of IDARAC was extended beyond two weeks. IDARAC should be used with caution in patients with a history of peptic ulcer or other gastrointestinal lesions.

ADVERSE REACTIONS:

The most commonly occurring side effects reported during IDARAC (floctafenine) therapy were:

Central Nervous System: Drowsiness, dizziness, headache, insomnia, nervousness, irritability.

Gastrointestinal System: Nausea, diarrhea, abdominal pain or discomfort, heartburn, constipation, abnormal liver function, gastrointestinal bleeding.

Urogenital System: Dysuria, burning micturition, polyuria, strong smelling urine, urethritis and cystitis.

Other less frequently occurring side effects were: tinnitus, blurred vision, dry mouth, thirst, bitter taste, anorexia, stomach cramps, flatulence, hot flushes and sweating, tachycardia, weakness and tiredness.

Allergic-type Reactions: Maculopapular skin rash, pruritis, urticaria, redness and itching of the face and neck.

SYMPTOMS AND TREATMENT OF OVERDOSE:

No cases of overdose have been reported with IDARAC (floctafenine), therefore no specific information on

symptoms or treatment is available. Standard procedures to evacuate gastric contents, maintain urinary output and provide general supportive care should be employed.

DOSAGE AND ADMINISTRATION:

The usual adult dose of IDARAC (floctafenine) is 200 to 400 mg every 6 to 8 hours as required. The maximum recommended daily dose is 1200 mg. IDARAC is recommended for short-term management of acute pain. The tablets should be taken with a glass of water. IDARAC is not recommended for use in children.

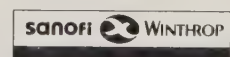
AVAILABILITY:

IDARAC (floctafenine) tablets are available as round, biconvex, creamy white tablets containing 200 mg floctafenine with the markings "W" on one side and on the other side "I" with "200" below; and as round biconvex, creamy white tablets containing 400 mg floctafenine with the markings "W" on one side and on the other side "I" with "400" below. IDARAC is available in bottles of 100 and 500 tablets. Store at room temperature, protected from light. IDARAC is a Schedule F (prescription) drug. Product monograph available upon request.

References:

1. Bentley K, Camarda AJ, Melzack R, Morgan P, Roy C. Floctafenine, acetaminophen/codeine combinations, and placebo in dental pain. *Curr Ther Res*. 1991;49(2):147-154.
2. Lomas DM, Gay J, Midha RN, Postlethwaite DL. A double-blind comparative clinical trial of floctafenine and four other analgesics conducted in general practice. *J Intern Med Res*. 1976;4:179-182.
3. Data on file, Sanofi Winthrop (Dysmenorrhea Study).
4. Baird IM. A comparative blood loss study of floctafenine and aspirin in normal subjects. *Br J Clin Pharmacol*. 1976;3:936-938.
5. Data on file, Sanofi Winthrop (Adverse Events Report).

¹ Idarac (floctafenine) is a nonsteroidal anti-inflammatory drug indicated for short term use in acute pain of mild to moderate severity



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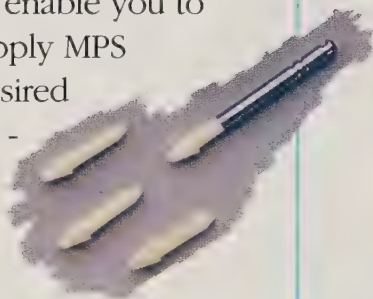
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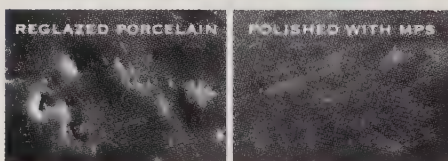


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Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions

Ronald E. Jordan, DDS, MSD
Makoto Suzuki, DDS, MS, DMD

Dentin bonding materials are of fundamental importance to clinicians for two primary reasons. First, bondable materials are associated with an extremely conservative approach to restorative dentistry. Second, due to the high incidence of cervical erosion and root carious lesions in the aging population, the need and demand for materials that bond reliably to dentin and cementum are unquestionably prevalent.¹

The phosphonated dentin bonding materials Scotchbond (3M Dental Products Co., St. Paul, Minn.) and Prisma Universal Bond (L.D. Caulk Co., Milford, Del.), originally introduced in the early 1980s, were unquestionably a step in the right direction. Unfortunately, they left a great deal to be desired. Davidson et al² have clearly demonstrated the major limitation of these materials. They bond to dentin with insufficient strength (approximately 60 kg/cm²) to withstand the polymerization contraction shrinkage of the composite materials placed on them. Polymerization contraction shrinkage stress results in the formation of a contact gap at the resin-dentin interface (Fig. 1). This ultimately leads to the failure of the restoration

through outright loss or micro leakage and recurrent caries at the cervicogingival margin (Fig. 2). Clearly, it is of utmost importance to develop resin-dentin bonding systems where the bond to dentin is capable of withstanding composite polymerization contraction shrinkage without gap formation at the dentin interface. The "new generation" of universal dentin bonding materials – Tenure Bond (Den Mat Corp., Santa Maria, Calif.), Allbond 2 (Bisco Inc., Itasca, Ill.), Gluma 2000 (Columbus Dental, St. Louis, Miss.), and Prisma UB3 (L.D. Caulk), for example – offer promising potential in this regard. They bond to dentin with a bond strength (180-200 kg/cm²) that more closely approximates the strength of resin's bond to acid-etched enamel (200 kg/cm²),³⁻⁵ which is known to be virtually indestructible.

Barkmeier⁶ has reported a bond strength of Tenure to dentin in the region of 200 kg/cm². Munksgaard and Asmussen⁷ have reported high bond values for Gluma. Although these *in vitro* data are unquestionably meaningful in terms of inferring clinical performance, it is clearly necessary to expose such systems to clinical trials to identify their level of reliability.⁸

This investigation was designed to evaluate the clinical effectiveness of Tenure, Allbond 2, Gluma 2000, and Prisma UB3, when used with their respective composite materials – Marathon (Den Mat), Bisfil M (Bisco Inc.), Pekafile (Columbus Dental) and Prisma APH (L.D. Caulk).

Materials and Methods

A total of 411 cervical erosion lesions were selected for clinical treatment using Prisma Universal Bond 3 (n=100), Gluma 2000 (n=95) Tenure bond (n=115) and Allbond 2 (n=101). The lesions were treated in the following manner: the teeth were isolated under rubber dam, and the adjacent gingival tissues were retracted using 212 clamps (Ivory 212 SA, Columbus Dental) to secure unrestricted, contamination-free access. During this process:

1. Manufacturer's directions were closely adhered to in placing the bonding systems.
2. The appropriate composite materials Prisma APH, Pekafile, Marathon and Bisfil M were applied and contoured using a selected composite instrument felt number four (GC American). A vertical

TABLE I

One Year Evaluation of L.D. Caulk Universal Bond 3/Prisma APH for Cervical Erosion Lesions n = 98

	Retention	Color	Marginal Integrity	Marginal Discoloration	Abrasion Resistance	Surface Texture	Surface Staining	Sensitivity Post-op
A = Alpha	95 (96.9%)	94 (96.9%)	93 (97.9%)	96 (98.9%)	97 (100%)	97 (100%)	97 (100%)	97 (100%)
B = Bravo	2 (2%)	3 (3.1%)	2 (2.1%)	1 (1.1%)	0	0	0	0
C = Charlie	1 (1%)	0	0	0	0	0	0	0

TABLE II**Clinical Evaluation Results of Gluma 2000/Pekafil Restorations at One-Year Recall
n = 91**

	Retention	Color Stability	Marginal Integrity	Marginal Discoloration	Abrasion Resistance	Surface Texture	Surface Staining	Sensitivity Post-op
A =	90	89	87	89	91	91	91	91
Alpha	(98.9%)	(98%)	(96%)	(98%)	(100%)	(100%)	(100%)	(100%)
B =	1	2	4	2	0	0	0	0
Bravo	(1.1%)	(2%)	(4%)	(2%)				
C =	0	0	0	0	0	0	0	0
Charlie								

TABLE III**Clinical Evaluation Results of Tenure/Marathon Cervical Restorations at Six-Month Recall
n = 110**

	Retention	Color Stability	Marginal Integrity	Marginal Discoloration	Abrasion Resistance	Surface Texture	Surface Staining	Sensitivity Post-op
A =	108	107	108	108	108	108	108	108
Alpha	(98.2%)	(99%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)
B =	0	0	0	0	0	2	0	0
Bravo						(2%)		
C =	2	0	0	0	0	0	0	0
Charlie	(1.8%)							

TABLE IV**Clinical Evaluation Results of Allbond 2/Bisfil M Cervical Restorations at Six-Month Recall
n = 100**

	Retention	Color Stability	Marginal Integrity	Marginal Discoloration	Abrasion Resistance	Surface Texture	Surface Staining	Sensitivity Post-op
A =	100	98	99	98	100	99	100	100
Alpha	(100%)	(98%)	(99%)	(98%)	(100%)	(99%)	(100%)	(100%)
B =	0	2	1	2	0	1	0	0
Bravo		(2%)	(1%)	(2%)		(1%)		
C =	0	0	0	0	0	0	0	0
Charlie								

layering technique was used during composite insertion.

3. The composite restorations were light cured by means of a 40-second application of visible light.

4. The restorations were finished using standardized techniques that involved

removing the gross excess with a multi-fluted carbide steel finishing bur (ET6F, Brasseler, Co., Savannah, Ga.), followed by final finishing, contouring, and polishing using either aluminum oxide finishing discs (3M Dental Products) or the Enhance finishing system (L.D. Caulk).

The restorations were recalled at six

months (Tenure and Allbond 2) and one year (Prism UB3 and Gluma 2000) for evaluation.

Evaluation

In this investigation, eight clinical parameters were used — retention, color stability, marginal integrity, mar-

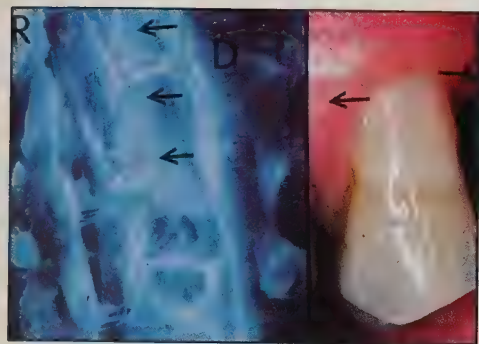


Fig. 1: Left: SEM of a contraction gap. Right: A partially dislodged restoration.

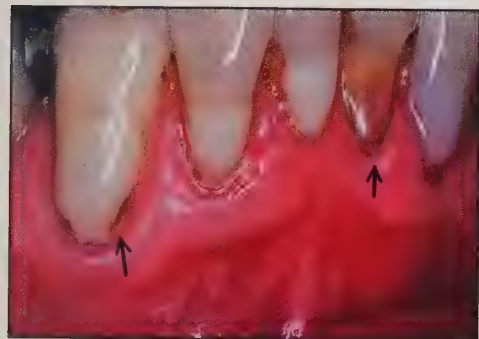


Fig. 2: Leakage and recurrent caries involving the cervicogingival margins.

ginal discoloration, resistance to abrasive wear, surface texture, surface staining, and postoperative sensitivity — in accordance with the criteria established by Cvar and Ryge in *Clinical Evaluation of Dental Restorative Materials*, which were appropriately modified, as follows:

Retention:

Restoration:

- | | |
|---------|------------------|
| Alpha | a) Present. |
| Bravo | b) Partial Loss. |
| Charlie | c) Absent. |

Color Stability:

Color:

- | | |
|---------|--|
| Alpha | a) No mismatch — color of restoration and adjacent tooth are the same. |
| Bravo | b) Slight discoloration not requiring replacement. |
| Charlie | c) Discoloration requiring replacement. |

Marginal Integrity

(Assessed both digitally, using a sharp number-five explorer, and visually.)

Margins:

- | | |
|-------|--|
| Alpha | a) Excellent continuity at the resin-enamel interface; no ledge, no discoloration. |
|-------|--|



Fig. 3A: A sensitive subgingival erosion lesion.

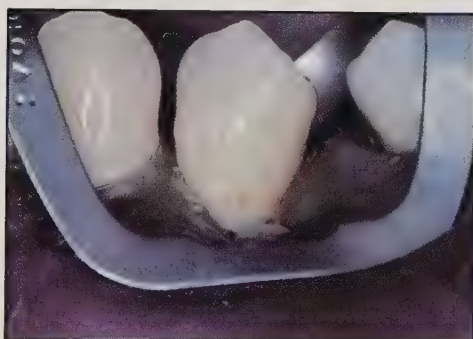


Fig. 3B: The same lesion after gingival retraction.



Fig. 3C: A completed Prisma UB3/Prisma APH restoration at the baseline.

- | | |
|---------|---|
| Bravo | b) Slight ledge or ditch at resin-enamel interface. |
| Charlie | c) Pronounced marginal ditch or ledge. |

Marginal Discoloration:

- | | |
|---------|--------------------------------------|
| Alpha | a) No marginal discoloration. |
| Bravo | b) Slight marginal discoloration. |
| Charlie | c) Extensive marginal discoloration. |
| Delta | d) Recurrent marginal caries. |

Abrasion Resistance:

Restoration Contour:

- | | |
|-------|---|
| Alpha | a) Completely intact with no perceptible loss of contour. |
|-------|---|



Fig. 3D: The same restoration at one-year recall.



Fig. 4: Tenure bonded restorations at six-month recall.



Fig. 5: Gluma 2000 bonded cervical restorations at one-year recall.

- | | |
|---------|--|
| Bravo | b) Slight loss of contour not requiring replacement. |
| Charlie | c) Extensive loss of contour requiring replacement. |

Surface Texture:

- | | |
|---------|----------------------|
| Alpha | a) Smooth and shiny. |
| Bravo | b) Smooth and dull. |
| Charlie | c) Grainy and rough. |

Surface Staining:

- | | |
|-------|-------------|
| Alpha | a) Absent. |
| Bravo | b) Present. |

Postoperative Sensitivity:

- | | |
|-------|-------------|
| Alpha | a) Absent. |
| Bravo | b) Present. |

A grand total of 399 cervical restora-



Fig. 6A: A cervical erosion lesion (maxillary right central incisor).



Fig. 6B: The same incisor restored with Allbond 2/Bisfil M at one-year recall.

tions, completed using the various materials, were subjected to a six-month to one-year recall evaluation. A total of 98 Prisma Universal Bond 3 and 91 Gluma 2000 restorations were evaluated at one year recall, while a total of 110 Tenurebond and 100 Allbond 2 restorations were evaluated at six month recall. The recall evaluation results for the various materials are presented in Tables I to IV, respectively.

Discussion

The high rate of retention demonstrated by the "new generation" dentin bonding systems clearly suggests that their dentin bonding capability is adequate to withstand the polymerization contraction shrinkage of their corresponding composite materials (Figs. 3-6). Unquestionably, their relatively high degree of marginal integrity and low incidence of postoperative sensitivity reinforce this conclusion. It must clearly be kept in mind, however, that only prolonged, ongoing clinical observations of these agents will prove their level of clinical acceptability. In the meantime, early clinical results appear most promising indeed.

The high success rate obtained with the four materials tested in this study is clearly related to two major factors, namely:



Fig. 7: The hybrid layer (C = composite; H = hybrid; D = Dentin)

1. Their bond values to dentin closely approximate or exceed the bond to phosphoric acid etched enamel; and
2. Most of the materials tested micro-mechanically bonded to dentin by means of the Nakabayaski hybrid layer (Fig. 7) mechanism.⁹ ■

Dr. Ron Jordan is dean of the faculty of dentistry, University of Manitoba.

Dr. Makono Suzuki is a professor and the head of the department of restorative dentistry, Faculty of dentistry, University of Manitoba.

References

1. Katz, R.V., Nazen, S.P., Chilton, N.W. et al. Prevalence and intraoral distribution of root caries in an adult population. *Caries Res* 16:265-271, 1982.
2. Davidson, C.L., deGee, A.J. and Feilzer, A. The competition between the composite dentin bond strength and the polymerization contraction stress. *J Dent Res* 63:1396-1403, 1984.
3. Bowen, R.L., Cobb, E.N. and Rapson, J.E. Adhesive bonding of various materials to hard tooth tissue. Improvement in bond strength to dentin. *J Dent Res* 61:1070-1076, 1982.
4. Bowen, R.L. Substitution of aluminum oxalate for ferric oxalate in adhesive bonding. *J Dent Res* (Abstract) 65:238, 1986.
5. Suzuki, M., Gwinnett, A.J. and Jordan, R.E. Relationship between composite resins and dentin treated with bonding agents. *J Dent Res* (Abstract) 65:765, 1986.
6. Barkmeier, W. Presentation at the Den Mat Symposium on Adhesive Resins, Santa Maria, Calif., July 1988.
7. Asmussen, E. and Munksgaard, E.C. Adhesion of restorative resins to dentin Al tissues. In: Van Nerle, G., Smith, D.C. (eds.) *Posterior Composite Resin Dental Restorative Materials*. Utrecht, Peter Szule Publishing Co., 1985, p.p. 217-229.
8. Finger, W.J. Dentin bonding agents. Relevance of in vitro investigations. *Am J Dent* (special issue) January 1988, p.p. 184-188.
9. Nakabayaski, N., Nakamura, M. and Yasuda, N. Hybrid layer as a dentin bonding mechanism. *J Esth Dent* Aug, 3(4):p 133-138, 1991.

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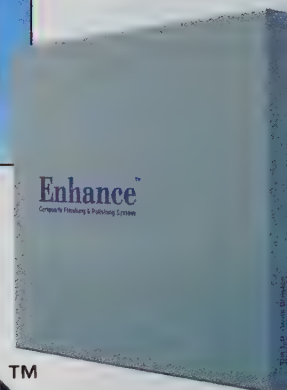
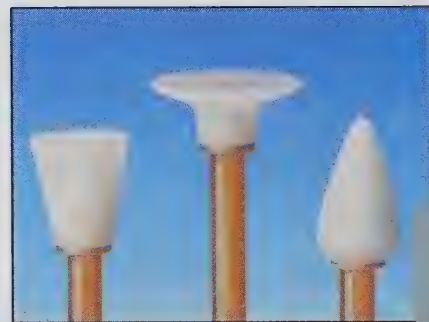


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W.H. Douglas et al., *Journal of Dental Research Special Issue*, No. 425 (July 1992). ² This guarantee applies only to the teeth. It does not cover the laboratory fee for replacing the teeth.

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NATIONAL HIGHLIGHTS

March 4-6, 1993
B.C. Dental Meeting
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April 28 - May 1, 1993
1993 Canadian Dental Association Annual Dental Meeting (Hosted by ODA)
Toronto, Ontario
See blue pages for more details or call CDA Conventions
1-800-267-6354 (613) 523-1770

May 1, 1993
Canadian Dental Association Interim Board of Governors Meeting,
Toronto, Ontario
1-800-267-6354 (613) 523-1770

May 6-8, 1993
Newfoundland Dental Association Annual Convention
(709) 579-2362

May 16-21, 1993
Les journées dentaires
(514) 875-8511

May 21-22, 1993
New Brunswick Dental Society
(506) 452-8575

May 27-June 1, 1993
Alberta Dental Association Convention
(403) 432-1012

March/Mars 1993

March 11: The Edmonton and District Dental Society is presenting Dr. John Nathan "Updates In Pediatric Dentistry for the General Practitioner." For details, contact: Ms. Joyce Weissenborn at (403) 434-2542.

March 11-13: 25th Annual Mid Winter Meeting and Bonspiel (Western Canada Dental Society) in Vancouver, B.C. Interested individual curlers or teams can obtain more information by contacting: Dr. Elgin Duke, Chairman, 10340-134A Street, Suite 206, Surrey, B.C. V3T 4B8. Tel: (604) 585-3177.

March 20-24: 27th Australian Dental Congress in Melbourne, Australia. For more details, contact: National Dental Congress Secretariat, P.O. Box 29, Parkville, Victoria, Australia 3052. Tel: (03) 387-9955.

April/Avril 1993

April 4-7: Conference: Focus on Children - Protecting our Future, jointly sponsored by the Canadian Organization for Victim Assistance and Child Find Alberta, being held at the Calgary Convention Centre. For details, call: (403) 239-2920.

April 15-18: 5th International Congress on Preprosthetic Surgery in Vienna, Austria. For information, contact: G. Watzek, Congress President, Interconvention Austria Center Vienna, A-1450, Vienna, Austria.

April 16-17: Southern Ontario Surgical Orthodontic Study Group will meet in Windsor. For details, contact: Dr. Jeff Berger. Tel: (519) 258-2632, or fax: (519) 258-2637.

April 19-23: 2ème congrès d'Odonto-stomatologie de Côte d'Ivoire à Abidjan. Pour informations, contacter: Comité d'organisation, Dr. Adiko Eyholand F., 22 BP 512 Abidjan 22.

April 21-22: 10th International Oral Implant Symposium will be held at the Pan Pacific Hotel in Kuala Lumpur, Malaysia. For more details, contact: AOIA Secretariat, 268 Orchard Road #05-07, Singapore 0923, Republic of Singapore. Tel: (65) 734-3162.

April 23-24: 28th Annual Meeting of the Carl O. Boucher Prosthodontic Conference will be held in Columbus, Ohio at the Sheraton Inn, Columbus. For more information, contact: Dr. Robert Stevenson (614) 451-2767.

April 30: McGill University Class of '68 Reunion, will be held during the CDA Annual Meeting in Toronto, with dinner on April 30 and breakfast Saturday May 1. For more details, contact: Ilse Marotta (416) 735-7267.

May/Mai 1993

May 1: University of Toronto Class of '73 20th Reunion will be held in Toronto. For details, contact: Dr. Doug Johnston, tel: (416) 813-6008, or fax: (416) 813-6375.

May 15-19: 47th Annual Meeting of the American Academy of Oral Pathology will be held at the Holiday Inn by the Bay, Portland, Maine. For further information, contact: Leslie A. Davis, Executive Secretary, American Academy of Oral Pathology, 211 Woodstone Dr., Buffalo Grove, IL 60089. Tel: (708) 520-2559.

May 27-30: Alberta Dental Association/Academy of Periodontology Annual Scientific Meeting will be held at the Jasper Park Lodge, Jasper, Alberta. For details, contact: Dr. D.A. Scott, 1038 Dentistry - Phar-

macy Centre, University of Alberta, Edmonton, Alberta.

July/Juillet 1993

July 1-3: British Dental Association Annual Conference being held at the Bournemouth Conference Centre, in Bournemouth, England. For details, contact: British Dental Association, conference office, 64 Wimpole St., London, England, W1M 8AL.

July 4-7: 84th Annual Conference, Sustaining Our Communities: Health for the Future, is being held at the Radisson Plaza Hotel, St. John's, Newfoundland by the Canadian Public Health Association. For more information, contact: Robert Burr, CPHA Director of Communications, 1565 Carling, Suite 400, Ottawa, Ontario, K1Z 8R1. Tel: (613) 725-3769.

August/Août 1993

August 22-27: 7th World Congress on Pain, sponsored by the International Association for the Study of Pain, is being held in Paris, France. For more information, contact: International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA, 98105. Tel: (206) 547-6409.

September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact: WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

October/Octobre 1993

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

November/Novembre 1993

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, being held in San Francisco, CA. The association is inviting papers on a broad range of dental health topics for presentation, the theme of this year's meeting being "Partnerships For Success." Deadline for abstracts is April 1, 1993. For a copy of the abstract form or further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

A CALL TO ACTION

When I was asked to contribute a short guest editorial to the Canadian Dental Association *Journal*, I accepted the offer eagerly because it represented an important opportunity to communicate directly with the dentists of Canada. Until now, there has been limited contact between native people and the dental community, and even less regular interaction. This should not be seen as a criticism, but rather a summary of our past relationship.

Having reviewed the "Report on the Oral Health Survey of Canada's Aboriginal Children," produced by the University of Toronto, I see clearly the need to issue a call to action. We must rectify the serious deficiencies that exist in First Nations' dental health. If there is to be an effective response to this call, there must be a clear commitment on the part of the providers of prevention and treatment services, policy and decision-makers, community leaders and key health and social service personnel, as well as by concerned community members, parents, and users of the health system.

In my opinion, there are a number of roles that CDA and individual dental care professionals can play. The most obvious of these is addressing the need for increased services at the community level. As stated in the Toronto report, while nearly 75 per cent of children surveyed reported having had access to dental care in the last year, one quarter of them had demonstrable unmet needs, as reflected by continued pain or bleeding. Further evidence of need may be derived from the level of filled caries, which was 40.2 per cent for six year olds and 65.7 per cent for 12 year olds. The contrast to the general population is evident from the finding that 91 per cent of First Nations' and Inuit children had dental caries, compared to 48 per cent for 13-year-old Ontario non-natives who had no caries.

There are two aspects of service availability that require further examination. One is the fact that fly-in communities and otherwise remote areas have much higher levels of unmet treatment needs. It is just as difficult for providers to get to these communities as it is for community members to get out to obtain dental services. A second aspect is the need for improved communication with people at the community-level. The study clearly shows that the existing messages on preventive dental health have not been absorbed by Native parents and children. This situation must be changed if the current trends of poor dental health are to be reversed.

While service availability is an important issue, the dental profession plays a critical role in determining the quality of dental care available to Canadians. Indeed, individual and community dental health in most of Canada has improved as a result of continued technical and scientific advancements and the increased availability of dental professionals. If First Nations' dental health is to improve, the dental community must work with First Nations and the federal government to develop systematic dental health

strategies to address First Nations' dental health needs, including strategies to provide the necessary dental manpower in First Nation communities.

On an interim basis, we can ensure that First Nations' communities have access to dental care by accepting the role that dental therapists can play as part of an on-reserve dental care team. Developing an appropriate relationship with this cadre of workers will assist in addressing not only the limited range of treatment service availability in First Nations' communities, but, perhaps more importantly, it will assure the availability of prevention and health promotion programs for our people. A longer term approach lies in developing strategies to increase the number of dentists of aboriginal descent. The number of aboriginal graduates from dental schools has not kept pace with the numbers graduating in other professions, such as law, medicine, social work or education.

Another role that dentists can play collectively is via their lobbying influence, which can be exerted by provincial and national dental associations. As you may know, the lack of an adequate drinking water infrastructure in many First Nations' communities represents a tremendous area of unmet need. Implementing improved access to quality water systems backed with adequate fluoridation programs would do much to improve the First Nations' dental health. A second role that the dental profession can play would be to support measures to ensure appropriate food subsidies in remote or isolated communities. The federal government and the provinces subsidize alcohol distribution to assure uniform pricing in remote communities. At the same time, however, they have done little or nothing to ensure that First Nations' communities have adequate access to dairy products or fresh fruits and vegetables. The price of milk and fruits will vary tremendously in remote communities, making their regular dietary use an economic hardship. This situation contributes directly to the widespread and inappropriate use of sugar based "juices" and drinks as well as other sugar added snack items.

In conclusion, there is much to be done in First Nations' dental health. Admittedly, there is also an important role to be played by the leadership of First Nations in advocacy, role modelling, and in making health a priority. By working together, however, we can make improvements not only in ensuring First Nations' access to dental services, but also in addressing the root causes of dental caries in First Nation populations.

The benefits of this collaboration are a healthier population, which has an improved self image and concept. Surely, these results are worth pursuing.

Richard Jock

Director, Policy and Research Development, First Nations' Health Commission

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YOU'LL LEARN OR ELSE!

Mandatory continuing education is becoming more and more of a fact of life in dentistry. But that hasn't stopped dentists from debating the merits of mandatory education, and asking a very basic question: Is it necessary and does it work?

Minnesota's Board of Dentistry, in 1969, became the first jurisdiction in North America to legislate mandatory continuing education. Manitoba introduced it to Canada in 1972. Today, five Canadian provinces have passed mandatory continuing education legislation, and three others – Nova Scotia, Newfoundland and Ontario – are expected to adopt a similar "you'll learn or else" philosophy in 1993.

Not surprisingly, the actual requirements for mandatory continuing education vary from province to province. Typically, however, dentists are required to take 25 to 30 hours of continuing education a year. Any dentist who fails to obtain this minimum requirement is subject to losing his or her license.

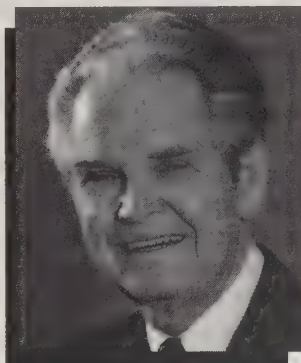
The principle behind mandatory continuing education is that the whole world in general, and dentistry in particular, is undergoing rapid change. And to best serve their patients, dentists must continually keep up-to-date on the latest innovations.

While this premise is laudable, it evokes a certain inconsistency. If dentists are true professionals, and they are, they should subscribe to the philosophy espoused by G.V. Black almost a century ago – "The professional has no right to be other than a continuous student" – without any coercion.

Unfortunately, dentists and other professional people are fraught by the same human failings as the rest of mankind. We suffer from apathy. We tend to put things off. We aren't perfect. In short, we can't always be trusted to do the right thing.

But perhaps there is some truth to that old adage that you can lead a horse to water, but you cannot make it drink. In other words, you might be able to force someone to pursue continuing education, but you cannot make him learn. Only people that truly want to learn will do so.

Nor is all learning equal. Provincial licensing authorities must pay close attention to the types of mandatory education courses, clinics or lectures that receive approval for credit. Not all courses are of same quality, and there is no simple way to measure how good they are. While many excellent courses are available today, it's probably fair to say that some of them are really glorified ski trips to Whistler, cruises



Dr. P. Ralph Crawford

on the Caribbean, or golf vacations in Banff.

And what about practice management courses? Should credits be given for attending lectures on how to make more money and pay less tax? Do these courses ultimately benefit the patients?

Then there's the question of availability. Most courses are given in major centres, where the greatest concentration of Canada's dentists live and work. This can cause problems for dentists living in rural or remote communities. For them, attending a one-day lecture course can often mean

spending three days out of the office.

Despite these questions, it is clear that there are some benefits – both direct and indirect – provided by mandatory continuing education. First and foremost, it compels the indolent to make some effort for self-improvement. If only by the process of osmosis, the least enthusiastic participant in a continuing education course must surely gain something from sitting in on a lecture or participating in a conversation with a confrere during a coffee break. Better that some effort is made than none at all.

Another benefit is the increasing quality of the lecturers and clinicians on the continuing education circuit – and quality clinicians are not inexpensive. As continuing education becomes mandatory, more dentists attend presentations, and more money is available to attract the top lecturers.

Still, licensing authorities have a difficult role to play. Their prime responsibility is to protect the public, but the public is no longer convinced that self-governing professions automatically put their best interests first. As one registrar said, "We must at least give the public the perception that we are making every effort to keep our members current on the latest techniques."

All things considered, however, mandatory continuing education is beneficial to both the profession and the public. So until something better comes along, we have to laud our licensing authorities for doing the best they can to lead us into responsible practice.

As St. Thomas Aquinas (1225-1274) said, "Of all human pursuits, that of wisdom is the most sublime, the most profitable and the most delightful."

P. Ralph Crawford, BA, DMD

Editor of the Canadian Dental Association Journal

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Product Information on page 132

3M

President's Column

DOING THE RIGHT THING

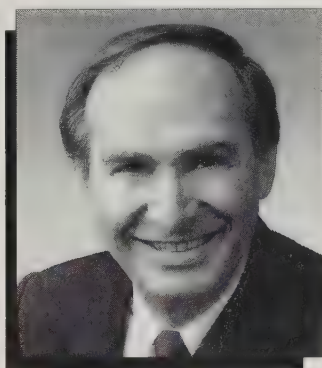
Yogi Berra, the great New York Yankees catcher and dugout philosopher, once said, "We are faced with insurmountable opportunities." If you think about it, his aphorism applies as well to dentists as it does to baseball players.

The fluoride issue provides a good example. Today, the introduction of fluoride into community water supplies and toothpaste is often referred to as the "public health success story of the century." But when I appeared on the dental scene some 23 years ago, fresh out of school, dental caries was still the most prevalent disease in the Western world. And there was considerable opposition to the use of fluoride.

We all know what fluoride did to dental caries. In 1972, the DMF index for 13 year olds in Ontario was 5.3. By 1990 it had dropped to a mere 1.72. And we are the people who did it. Dentistry faced the "insurmountable opportunity" presented by fluoride's potential to reduce dental caries head-on. We did the required scientific research; lobbied all levels of government to implement pro-fluoride legislation; encouraged the application of topical fluoride gels; promoted fluoride-containing toothpastes; prescribed fluoride supplements in non-fluoridated areas; and fought the fringe-element loonies who wanted to end fluoridation.

We did all of this in a deliberate attempt to eliminate the cavities caused by caries, despite the fact that fixing those same cavities provided our number-one source of income. And we did it at a time when dentists were graduating from Canadian dental schools in record numbers. In effect, while the work that formed the mainstay of most dental offices was decreasing, the number of dentists was increasing. Talk about doing ourselves in!

Until recently, I didn't think that anything could demonstrate dentistry's dedication and



Dr. Bernard Dolansky

commitment to the public's welfare better or more singularly than our efforts to make fluoridation a part of everyday life. But then along came the mercury amalgam scare. Once again, we were faced with an insurmountable opportunity.

If we had been willing to forsake our professionalism and self respect, we could have solved our busyness problems by one very obvious move. Dentistry could have sided with the naysayers. We could have agreed with them when they

said that dental amalgam was a menace to the public's health, and that the alloy restorations in people's teeth should all be replaced. Now, that would have solved dentistry's busyness problem for a long, long time.

It would also, of course, have negated everything that we stand for as responsible, ethical, health care professionals. Balanced, impartial panels of the best scientific minds in North America and Scandinavia have not found any basis for banning dental amalgam. To date, the best scientific research we have indicates that it is not a health hazard.

Knowing this, it is impossible for us to argue against dental amalgam – a material that is relatively long-lasting, not technique-sensitive, and highly cost-effective – even if it would be in our self-interest to do so.

As health care professionals, our primary responsibility is to our patients. So we continue to promote the use of both dental amalgam and fluoride. On these issues, as on many others, the Canadian Dental Association acts collectively to do what our members do for their patients each and every day, the right thing. And we're doing it extremely well. That's one of the reasons I'm proud to be president of CDA.

*Bernard Dolansky, BA, DDS, MS
President of the Canadian Dental Association*



■ Pediatric Dentistry

I have been wondering why, on the *Journal's* staff page under specialty editors, Dr. Victor Legault is named under "Pedodontics," when in 1984 the name of the specialty was changed to "Pediatric Dentistry"?

R.E. Diamond, DMD
Winnipeg, Manitoba.

Editor's Note

Thank you for bringing this matter to my attention. The change has been made.

■ Radiographic Surveys

I was most interested to read the well researched and extensively documented article by Stephens et al in the October 1992 issue of the *Journal*, "A Critical View of the Rationale for Routine Initial and Periodic Radiographic Surveys."

In this respect, I would like to mention the report of the Working Group on Oral Radiological Services, published under the authority of the minister of National Health and Welfare in December 1979.

The working group consisted of a radiation physicist, a pathologist, the senior consultant in dentistry of the health services directorate, two private practitioners and three oral radiologists. Its terms of reference were wide, but there was an implied hope that the group would publish guidelines on the number and type of radiographs in oral radiographic examinations, and the interval of time between such examinations. The group was opposed to such a directive, holding to the principle that this was a matter of individual clinical judgement, based on the underlying precaution of ALARA (as low as reasonably achievable) with regard to dosage. However, the article of Stephens et al suggests that

the authors are lessening clinical freedom by laying down limiting guidelines.

I was surprised that no mention was made of asymptomatic chronic inflammatory periapical lesions. There is probably no accurate assessment of the incidence of this type of occult lesion detected solely by radiologic investigation, but I am certain that it is far greater than all the other pathologic conditions mentioned in this article.

The authors mention the risk-benefit ratio, but the relative balance between benefit and risk is very difficult to assess because, in dental diagnostic radiography, the risk factor is undeterminable; the acceptable dose is unknown, and the statement that all radiation is dangerous is untenable, as radiation has always been a normal environment of man. In 50 years involvement in oral radiology, I have never heard of an indisputably authenticated case of harm to a patient from dental radiography, although I have seen many examples of damage to operators. Approximately 12 years ago, in discussing this subject with Richards, a radiation physicist specializing in the dental aspect, he stated that in 40 years of involvement with radiation he was not aware of any case of damage being caused by dental radiography. Because of these uncertainties, the principle of ALARA was propounded.

Therefore it is reasonable to leave the prescription of the frequency, number and types of radiographs used to the clinician, who should be free to respond to each clinical situation without limiting guidelines.

H. Guy Poyton, FDS, FRCD
Toronto, Ontario

Authors Response

We wish to address the three issues raised in Dr. Poyton's letter. First, all the health sciences have accepted the principles established by the international and national agencies concerned with radiation protection. These principles rest upon the fundamental concept that there is no basis to assume the exposure of patients to ionizing radiation has zero risk.¹⁻³ From this, the International Commission on Radiological Protection developed the joint principles of justification and optimism. A radiological procedure is justified, if after clinical examination, a diagnostic need has been established. Then, when radiographs are

taken, the optimal dose-limiting technique is used (ALARA). The adoption of ALARA by itself does not justify the intent of these principles.

We respectfully suggest that the concern about "limiting guidelines" is misplaced. The current guidelines simply reflect the principle of justification. The main thrust of our article was to illustrate the lack of justification for routine initial and periodic radiography in the absence of clinical indications. We did not "lay down" any limiting guidelines, nor did we make any recommendations on the type, number, or frequency of diagnostic radiographs. In fact, in the second last paragraph, we emphasized that often, in the presence of disease, not enough radiographs are taken. The basis of prescription radiography lies in the judgement of the clinician to determine need and then the extent of radiography required.

Finally, with respect to the chronic inflammatory periapical lesion, there is no question that this is the most frequently encountered jaw lesion. However, for the vast majority there is clinical evidence of pain, tenderness, caries, fracture, large restorations, color changes, history of pulpitis or root canal therapy. Others will be seen when radiographs are prescribed prior to restorative therapy, especially for fixed or removable prosthodontics. Certainly, it is possible that a few asymptomatic lesions may be overlooked. The search for these quiescent lesions could never justify the routine use of initial and periodic radiographic surveys.

Although the risk from dental use of ionizing radiation is very low, we cannot on this basis claim dispensation from the principles of practice as developed by the ICRP.

R.G. Stephens, DDS, M.Sc.
S.L. Kogon, DDS, M.Sc.
London, Ontario

1. Annals of the ICRP, Publication 33. *Protection against ionizing radiation from external sources used in medicine*. Oxford, Pergamon Press 9:6-7, 1982.
2. Ministry of Health, Ontario. *The healing arts radiation protection guidelines*. p. 203, 1987.
3. White, S.C. Assessment of radiation risk from dental radiography. *J Dentomaxillofac Radiol* 21:118-126, 1992.

News Update

U of A Continues 75th Anniversary Celebrations



Dr. Sperry Fraser (front), received special recognition as the oldest living alumnus of the University of Alberta's dental faculty. The presentation was made during a banquet to celebrate the faculty's 75th anniversary. Pictured with Dr. Fraser are (left to right): Dr. Norman Wood, dean of dentistry; Dr. Paul Davenport, president of the University of Alberta, and Dr. Geoffrey Sperber, chairman of the 75th anniversary committee.

Throughout 1992, the University of Alberta's dental faculty staged a series of special events to commemorate its 75th anniversary.

In October, for example, a conference on craniofacial development and anomalies attracted delegates from Denmark, Belgium, Germany, Japan, the United States and Canada. Keynote speakers included Dr. Michael Cohen, Jr., a professor of oral biology at Dalhousie University; Dr. Robert Gorlin, a regent's professor of oral pathology and genetics at the University of Minnesota; and Dr. T.V.N. Persaud, the chairman of anatomy at the University of Manitoba.

Also of note was the special presentation made to Dr. Sperry Fraser December 3, during the faculty's 75th anniversary banquet. At 92, Dr. Fraser is the dental faculty's oldest living alumnus. A 1930 graduate, he was chairman of the University of Alberta's department of prosthodontics from 1932 to 1962. ■

Caveat Emptor!

Several unsolicited mailings that arrived in dentists' offices across Canada recently may contain "buyer beware" offers.

One such mailing consists of a large – 45 centimetres by 60 centimetres – graphic poster produced by Prints for Professionals, of Calgary, Alberta. The poster, which is probably intended to be displayed in the reception area, reads: "Your Health and Safety Are Our Primary Concerns." This main heading is accompanied by text and illustrations indicating that the dental offices displaying the poster follow universal infection control guidelines.

The poster also bears – illegally – a large illustration of the original Canadian Dental Association logo. CDA was never approached for permission to use this logo, and is in no way connected with the poster.

Dentists who receive this mailing and *do not* want the poster are asked to return it to the company along with a supplied mailing label. It is assumed that any dental office that keeps the poster will be invoiced for it.

According to the Department of Consumer and Corporate Affairs, the poster offer constitutes a "forced sale," and wise consumers will return the package unopened. No advice was offered on what to do if the package had already been opened, but it is assumed that Prints for Professionals would have little, if any, legal recourse for collecting payment on unsolicited material.

The other mailing – which offered dentists a free VCR, TV or CD player in return for the purchase of \$598 worth of diamond burs – came from M.D.T. (Canada) Industrial Dental Tools Inc. of Montreal. Consumer and Corporate Affairs advice on this offer is: "Buyer beware...Whenever an offer seems too good to be true, it usually is." ■

CDA 1993 Awards Nominations Sought

CDA is seeking nominations for its 1993 awards, including CDA Honorary Membership, Distinguished Service, and the Award of Merit.

Nominations received by March 30 will be reviewed by the CDA nominations, awards and trusts committee, which will then make recommendations on suitable award winners to the association's executive council. The 1993 award recipients will be named during the annual meeting of the CDA board of governors September 10-11 in Ottawa, Ontario.

No more than one individual should be proposed for Honorary Membership or the Distinguished Service Award, and submissions must include detailed curriculum vitae for each nominee. Although submissions should indicate the award an individual is being nominated for, the nominations committee reserves the right to recommend which award, if any, will be granted to that person.

Honorary Membership

The association's highest honor is honorary membership, which recognizes individuals deemed to have made outstanding contributions to the art and science of dentistry, or to the dental profession, over a sustained period of time. These contributions can be provincial, national or international in nature.

In general, only one or two honorary memberships are awarded annually, and CDA may elect not to present this award in any given year. Winners receive a personalized parchment scroll and a lapel pin. Honorary members who are licensed dentists are exempt from CDA membership dues, and all winners may attend association-sponsored scientific and social functions, as well as annual meetings and conventions, at no cost.

Distinguished Service Award

CDA's Distinguished Service Award is presented to dentists or laymen to recognize either an outstanding contribution in a given year, or outstanding service over a number of years. It may also recognize outstanding contributions to the dental profession at the academic, corporate, specialty society, council or committee level. Recipients receive an engraved plaque.

Award of Merit

The Award of Merit is presented annually to an individual who has served in an outstanding capacity in the governing of CDA or made a similar contribution to Canadian dentistry. Candidates should have served at least two full terms as a governor of the association and two full terms on the executive council, or four years as a council, commission or committee chairman, or a number of years with a dental organization, institution or specialty section.

The recipient receives an engraved plaque.

Certificate of Merit

The Certificate of Merit recognizes special service at any level of dentistry. In general, it is reserved for Canadian dentists and other individuals who have given at least one full term of service on a council, commission or committee of CDA, or long-standing service at the corporate or specialty society level.

The awards committee will not receive nominations for this award. Recipients will be selected by the committee.

Nominations for Honorary Membership, Distinguished Service or the Award of Merit should be submitted by March 30 to: CDA Committee on Nominations, Awards and Trusts, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ont. K1G 3Y6.

Nominations should be kept in confidence until the final decision regarding awards has been made. ■

The Academy of Sports Dentistry: A 10 Year Success Story

Founded in 1983 in San Antonio, Texas, the Academy of Sports Dentistry is celebrating its 10th year of providing dentists, physicians, trainers, coaches, dental technicians and educators with a forum to exchange ideas on sports dentistry and the dental needs of athletes.

The academy, which boasts an international membership of over 300 members, gathers and distributes information on dental athletic injuries. It also encourages research geared toward preventing these injuries, and hosts an annual meeting focused on this growing health care concern. A highlight of the annual event, which includes both scientific sessions and a business meeting, is a one-day participatory course on the fabrication of different types of mouthguards.

The 1993 annual meeting of the academy will be held May 20-22 in New Orleans. Further information may be obtained from Dr. Art Wood of Mississauga, Ontario, at: 416-823-2008; or Dr. William Olin of the University of Iowa Hospital, at: 319-356-2601. ■

Bahamian Dentists Launch Adopt A Special Child Campaign

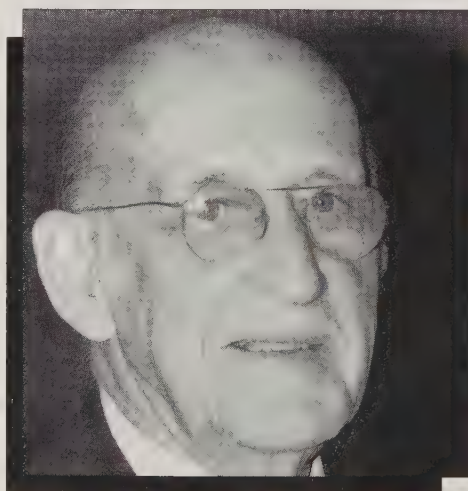
Members of the Bahama Islands Dental Association (BIDA) have collaborated with the Bahamian Ministry of Health to develop a unique dental care project.

Called "Adopt a Special Child," the project was officially launched in Nassau last year by Mrs. Dorothy Phillips, the deputy permanent secretary to the Ministry of Health. Under the program, children at the Stapledon School for the Mentally Retarded and the Salvation Army's School for the Blind will be paired with BIDA members who will provide them with free dental care.

Dr. Bernard Nottage, the Bahamian minister of education, said that his country needs the participation and co-operation of the "most gifted of our citizens" to build a better Bahamas. "Dentists, out of the professional groups, ought to bear a greater proportion of the burdens of helping us to solve the problems that we have, because they are very educated people, they are very travelled people, they are exposed people and they have very much to offer."

An enthusiastic participant in the "Adopt a Special Child" project is Dr. Hal E. Leyland, an expatriate Canadian who graduated from the University of Toronto. Dr. Leyland, who has the unique distinction of being both a life member of the Canadian Dental Association and a founding member of the Bahama Islands Dental Association, retired from practice some years ago. But not for long: "They have assigned a 13 year-old mentally retarded girl to me for treatment, so I guess I'm a practising dentist again," he explained. ■

Last of the Whiz-Bangers?



Dr. Aubrey Crich, Grimsby, Ontario – the last of the "Whiz-Bangers." (Photograph courtesy of The Independent, Grimsby, Ontario).

Dr. Aubrey Crich, who celebrated his 95th birthday on August 10, 1992, wants to know if he is the last of the University of Toronto's famous "Whiz-Bang" class of 1923.

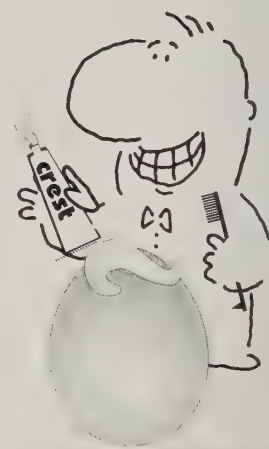
Named for the 77 millimetre gun used by the Germans in the First World War, the "Whiz-Bangs" were among the hundreds of qualified returning soldiers who sought entrance into the Royal College of Dental Surgeons of Ontario in 1919. Examination results printed in the *Dominion Dental Journal* show that 304 men and six women completed the RCDS course in 1923.

Following graduation, Dr. Crich went to Rochester, Minnesota, where he became the first Canadian to receive a fellowship in oral surgery from the Mayo Clinic. On his return to Canada, Dr. Crich practised dentistry in Toronto for 14 years before moving to Grimsby, Ontario, in 1940. He retired in 1969.

Dr. Crich now lives at Grimsby's Maplecrest Village. He walks a mile a day, although he admits that he has to rest for five minutes or so during the course of his walk, and jokingly says that he knows the location of all the benches and chairs in Grimsby.

If any of the *Journal's* readers know whether Dr. Crich is indeed the last surviving member of one of the largest dental classes ever to graduate in Canada, please contact the Editor, Dr. P. Ralph Crawford, at: 1-800-267-6354. ■

CDA and Crest Plan Egg-ceptional Dental Health Month



Thousands of grades 1 and 2 students will learn about the beneficial effects of fluoride this April, thanks to a unique Dental Health Month program.

Initiated under a joint agreement between CDA and Crest (Procter & Gamble), the "egg-ceptional egg-speriment" program is based on a simple science experiment that participating teachers can conduct in the classroom. One half

of an egg is covered in a fluoride solution (toothpaste), while the other half is left in its natural state. The egg, representing the teeth, is then immersed into a weak acid solution (vinegar), which represents cavity-producing acid.

After several hours, when the egg is removed from the acid solution, the half of the egg that was covered in fluoride is strong and intact, but the other half is soft and weak.

In February, more than 9,000 elementary teachers across Canada (7,200 English, 1,800 French) will receive information on the egg-speriment in the mail, along with coloring sheets featuring Live Bob and CDA's Five-Point Prevention Plan. The teachers will be encouraged to photocopy the coloring sheets and distribute them to their students.

But the egg-ceptional program is designed to extend beyond the classroom – dental offices can participate too. Coloring sheets and information on the CDA/Crest egg-speriment will be distributed to CDA's member dentists with the *March Journal*. By encouraging their younger patients to try the egg-speriment at home (with Mom and Dad's permission), participating dentists will help children to understand fluoride's benefits. In addition, Live Bob coloring sheets and crayons can be provided in the reception area to teach young patients about the rules of good dental health: *Don't rush your brush; Clean between; Eat, drink but be wary; Check your gums; Don't wait until it hurts.* ■

U. of T. Announces New Endo Program

The University of Toronto's dental faculty has initiated a new two-year, postgraduate program in endodontics.

Leading to a diploma in endodontics, the program is open to dentists with at least one year of general practice experience. It is the first postgraduate program in endodontics offered by a Canadian dental faculty.

The program is scheduled to begin in September, pending final approval by the University of Toronto's governing council. It will be offered under the direction of Drs. Shimon Friedman and Calvin Torneck.

Dr. Torneck received his DDS from the University of Toronto in 1958 and his MS from the University of Michigan in 1959. He joined the Toronto faculty shortly after his graduation from Michigan, and received a fellowship from the Royal College of Dentists of Canada in

1968. He was appointed full professor in 1990.

Dr. Friedman, originally from Jerusalem, Israel, was recently appointed associate professor and head of endodontics at U. of T. He is a noted researcher and lecturer in the field of endodontics, and was a clinical senior lecturer and director of postgraduate endodontics at the Hebrew University Hadassah, faculty of dental medicine in Jerusalem, prior to assuming his position in Toronto. ■

National Conference on Special Care Issues Planned

The 5th national conference on special care issues in dentistry will be held in Chicago April 2-4 at the Fairmont Hotel.

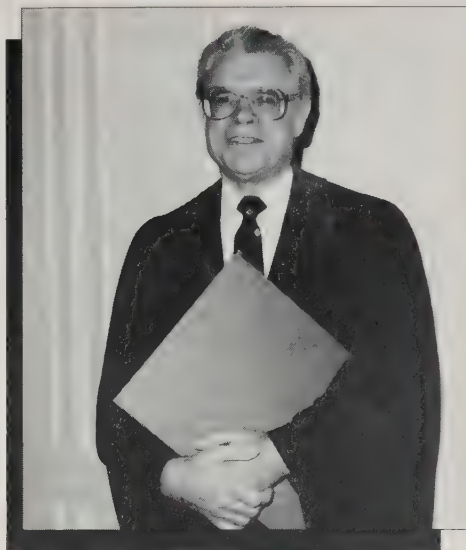
Cosponsored by the American Dental Association and the Federation of Special Care Organizations in Dentistry, the conference is expected to draw more than 300 researchers, clinicians, hospital dental directors and graduate students from the United States, Canada and abroad.

The conference will open with a keynote address on health care financing and reform. Half-day sessions on April 2, 3 and 4 will deal with a wide variety of topics concerning the treatment of special care patients, including: communications and the elderly; the HIV patient; the institutionalized patient; removable prosthodontics for the geriatric patient; dentistry's role in detecting and reporting patient neglect; challenges in the care of the demented patient; auxiliary personnel and special needs patients; and a comprehensive long-term care model for the elderly. Further information on the conference can be obtained by contacting: Special Care Organizations in Dentistry, 211 E. Chicago Ave., 17th floor, Chicago, IL 60611. ■

Dr. Dennis Smith Named Honorary Fellow

Dr. Dennis C. Smith, the director of the Centre for Biomaterials at the University of Toronto, was inducted as an honorary fellow of the Royal College of Dentists of Canada (RCDC) during its recent convocation.

"There is no question that Dr. Smith has made an outstanding contribution to dental science and education – locally, nationally and internationally," said RCDC past-president Dr. Norman Levine, in his citation to Dr. Smith.



Dr. Dennis C. Smith, Honorary Member, RCDC

Sixteen fellows and eight members successfully fulfilled RCDC's examination requirements and were inducted into the college last year.

Fellows:

Oral and Maxillofacial Surgery: Dr. G.A. Aiello, London; Dr. M.L. Fain, Winnipeg; Dr. E. Morin, Montreal; and Dr. A.D. Morrison, Halifax.

Orthodontics: Dr. J.I.M. Allan, Kelowna; Dr. S. Chiang, Vancouver; Dr. S. Konigsberg, Montreal; Dr. D.L. Venne, Repentigny; and Dr. O.S. Kopytov, Montreal.

Dental Sciences: Dr. L.M.D. MacPherson, Glasgow; and Dr. H.C. Tenenbaum, Toronto.

Endodontics: Dr. P. Kobernick, Montreal.

Oral Radiology: Dr. G.V. Packota, Saskatoon.

Periodontics: Dr. E.A. Toporowski, Victoria.

Pediatric Dentistry: Dr. L.R. Yanover, St. Catharines.

Oral Pathology: Dr. L. Zhang, Vancouver.

Members

Orthodontics: Dr. G. Angelopoulos, Athens, Greece; Dr. M. Flannelly-Blake, Dublin, Ireland; Dr. J. Mah, Edmonton; Dr. A.H. Graas and Dr. D.W. Kemp, Calgary.

Oral Radiology: Dr. R.N. Bohay, London, Ontario.

Endodontics: Dr. R.E. Clements, Red Deer, Alberta.

Pediatric Dentistry: Dr. A.G. Papathanasiou, Thessaloniki, Greece. ■

CFDE/CDA Hospital Dentistry Teaching Conference Planned

Plans are being finalized for a two-day CFDE/CDA teaching conference that will provide a forum for comprehensive discussions on the educational role of hospital dentistry.

To take place in Toronto this fall, the 1993 teaching conference, via formal lectures, panel discussions and focus groups, will present a spectrum of issues dealing with undergraduate, graduate and research training, career opportunities, service commitments, accreditation standards and administrative and financial support, as they apply to hospital dentistry.

Each Canadian dental faculty will be entitled to nominate one official representative, who will be entitled to receive limited funding for expenses. Other faculty and/or hospital dental staff are encouraged to participate in the conference as well, and will be charged a modest registration fee. Further information may be obtained by contacting CDA before March 15. Write or call Ms. Gay MacQuarrie, Conference Coordinator, CDA, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6; telephone 613-523-1770 or 800-267-6354, or fax 613-523-7489. ■

Quebec/CDA Court Case Creates Conundrum



A judgment released on Christmas Eve relating to some of the surplus monies generated from the Canadian Dentists' Insurance Program (CDIP) life insurance plan may result in payments to some policy holders, and has created an administrative conundrum.

The decision, rendered by Mr. Justice William McKeown of the Ontario Court's General Division, was the culmination of a long-standing dispute – spanning almost a decade – between the Quebec Dental Association (QDSA) and the Canadian Dental Association.

At issue was whether CDA, through its insurance arm, CDIP, had the right to use the surplus from the life-insurance plan to enhance the plans for all the dentist-participants – by subsidies, premium rebates, maintenance of a contingency reserve, etc. The QDSA said, "No!", but the other nine provincial cosponsors of CDIP said, "Yes."

The disagreement is one of interpretation and policy. There was absolutely no question of bad faith on the part of CDA, a fact that Mr. Justice McKeown made abundantly clear.

In CDA's view, the decisions for surplus utilization were undertaken by a group of people running an association in the best interests of its members. They were simply trying to make optimal use of surplus monies so that all participants benefited and the plans were strengthened. It is CDA's understanding that the insurance plans are non-participatory – no one has a policy with CDIP that allows them to individually profit from any surplus. Therefore, CDA feels the participation agreement with its cosponsors, the corporate (provincial) members, allows them to distribute the surplus to the benefit of the plans. Nine of the 10 provincial associations support this CDA position.

Mr. Justice McKeown did not hold the same opinion. In his judgment, he said, "The CDA is not permitted to utilize surplus funds unless such usage benefits those dentists who contributed to the surplus and the benefits are received pro rata."

To the extent that the judgment requires the surplus to be distributed – in cash – to the members who contributed to it and who have not received their full entitlement, these amounts may be taxable. Even the amount of surplus involved is an unknown. It depends when the surplus monies were accumulated and what benefits were already properly conferred.

The judgment has created a conundrum. It will cause extreme administrative difficulties for CDA and CDIP. Records prior to 1985 were not computerized and, as one official stated, "It will probably require an army of people sorting out who gets what, establishing a formula and determining what records exist prior to 1985 in usable form."

At time of writing, CDA was still in discussion with its legal representatives regarding an appeal. CDA continues to believe that plan surplus funds can best be used to improve the plans for all participants. In the meantime, members are assured that "it is business as usual" at CDA and Canadian Dental Services Plans Inc. (CDSPI).

CDA and CDSPI remain committed to providing the best possible coverage and most competitive rates possible and will, subject to legal requirement, continue to enhance and improve the programs as appropriate. It may take some time before this matter is finally determined and implications for participants fully known.

Information in the *Journal* and *Communiqué* will be updated as available. ■

"WHAT'S IT?"

This month's mystery came to us along with a box of dental instruments and supplies dating from the 1940s and '50s (we think). It is made of a heavy spring-like metal, and is about four millimetres wide. The letters "Caulk" are stamped into the metal. If you can help the CDA Museum to identify this item, please contact Dr. Ralph Crawford, *Journal* Editor, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6.

Many thanks to Christine Lilge, Robert McColl, William Fotty, Kim Danylchuk and Irving Siegel, who wrote us about the dental isolators featured in our November and December "What's It." One thing we learned was that the reason isolators didn't stay around for long is that

they didn't work very well as rubber dams for individual teeth.



CDSPI Reports

Know Your Insurance Options

If you carry insurance outside of the Canadian Dentists' Insurance Program (CDIP), you should make sure that your basic policy and premiums include only the provisions that you want or need. If they do, you should consider the alternatives to paying for these provisions. Start by looking at riders or options to tailor your coverage to meet your actual needs. A rider is a document or form containing special provisions that are not included in the basic insurance contract. Riders are added or attached to the policy and form part of the contract.

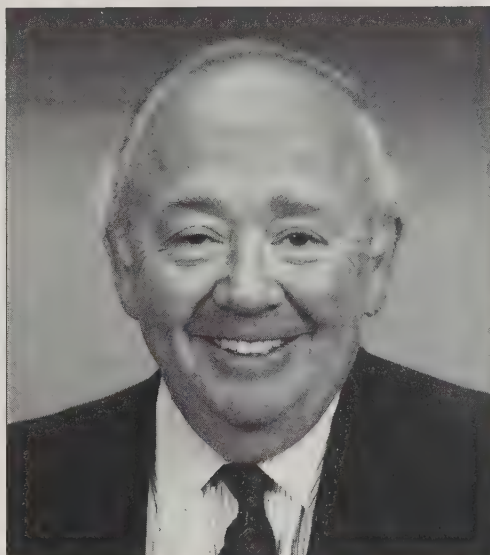
Some options you may need are:

1. *Cost-of-Living Adjustment (COLA)*: Inflation can erode the future effectiveness of your insurance protection. This insurance option increases your benefit payments in accordance with increases in inflation.

With COLA added to your CDIP long-term disability (LTD) policy, the insurer will adjust your disability benefit to match increases in the annual consumer price index (CPI), up to a maximum of eight per cent in any one year. CDIP's COLA is based on compound interest, so benefits are superior to COLAs based on simple interest.

2. *Future Insurance Guarantee (FIG) or guaranteed insurability*: This rider is available with your CDIP LTD, office overhead and basic life insurance. It allows you to increase your coverage at specified times in your life, without medical evidence. These occasions include marriage, the birth or adoption of a child, and certain birthdays (25, 30, 35, 40, 45 and 50).

3. *Own Occupation*: This CDIP LTD option provides disability benefits if you are a practising dentist and as a result of sickness or injury are unable to perform the essential duties of your regular occupation, even if you are able to earn income in a different occupation. Your regular occupation is considered to be any occupation involving the practise of dentistry that was carried on before you became disabled (teaching, consulting, etc.).



Dr. Rod Moran, President of CDSPI

Features Automatically Included in CDIP Basic Life and Long-Term Disability Plans

Some of CDIP's built-in features may prove to be beneficial to you. The three features listed below are now included in CDIP's basic life and long-term disability plans. Do not overlook them if you are considering purchasing outside coverage.

- ☐ HIV and hepatitis B coverage is automatically applied to all new and existing CDIP LTD participants at no extra charge. It comes into effect in the event that a participant contracts HIV or hepatitis B and his or her practice becomes limited under guidelines approved by the dental profession or a government agency. Disability benefits begin as soon as loss of income exceeds 15 per cent, even if no disability is yet apparent.
- ☐ The survivor benefit is paid automatically if a participant collecting LTD benefits dies. A lump sum equal to three times the last monthly benefit payment will be paid to the surviving spouse or the estate.
- ☐ Normally, life insurance benefits are only paid to a named beneficiary after an insured individual dies. But with CDIP's basic life insurance, terminally-ill participants (defined as people expected to die within 12 months) can receive payment of up to 50 per cent of the sum insured, to

a maximum of \$25,000. The insurer will consider these situations on an individual basis.

Saving On Your Insurance Premium

In today's economy, saving money is difficult. However, you can save on your insurance premium if you:

1. Avoid life insurance policies with "cash value" or "savings" features. They are an inefficient form of savings compared to other vehicles.

2. Increase your deductible. Your premiums will be less if you choose a higher deductible (the amount of any claim that you pay yourself).

3. Choose a longer elimination period. An elimination period is the length of time between the onset of disability and the date that benefits begin (i.e., date of disability + 30 day elimination period = start date of benefits). The longer you wait for your benefits to begin, the lower the premium you will be required to pay.

It's important to make sure that the steps you take to save on insurance premiums now don't result in financial hardship in the future, at the time of claim. You should take your overall financial picture into consideration when you make your insurance decisions.

Remember, you should only carry the amount of insurance that you need to cover an identified need. The CDIP philosophy for identifying your insurance requirements is: "If an individual faces a financial loss because of a certain event and feels that he cannot accept that financial loss comfortably, then he has identified a need for insurance." Remember you don't need to buy insurance at all if you can afford the loss. ■

CDSPI

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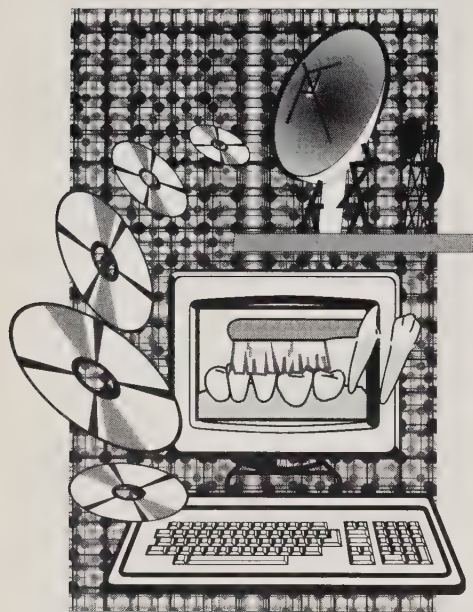


Hi-Tech/Hi-Care Dentistry

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Computer Applications in the Diagnosis and Monitoring of Periodontal Disease

Marilyn C. Miller, DDS



Today's high technology can be used effectively to respond to the challenges inherent in the complex etiology, diagnosis and treatment of periodontal diseases. Computers, with their ability to store, manipulate and analyze data, offer the practitioner enhanced diagnostic and treatment planning capabilities. It is not surprising, then, that in recent years we have seen numerous commercial applications of the new technologies designed to detect and assess periodontal diseases.

This paper presents some examples of the computerized, "high-tech," periodontal probes currently available or under development. Using these devices, dentists can now obtain, quick, accurate measurements of pocket depth, relative attachment and pocket temperature.

Measurement of Pocket Depth and Attachment Loss

Several periodontal diagnostic products employ special probes to record pocket depth, recession or attachment loss, and to transmit this information directly to a computer. These probe systems automatically determine how much of the probe tip is in the periodontal pocket. All the practitioner has to do is manipulate the probe handpiece until it touches a predetermined anatomic landmark on the tooth or tissue. At that point the computer calculates the distance from the anatomic landmark to the bottom of the pocket, and the dentist presses a foot pedal to record the measurement. The same relative landmark is used at each site during an examination and at each subsequent examination, enabling the dentist to compare measurements from area to area within the mouth, and to note any changes that occur between examinations.

Semi-automated systems offer accuracy and repeatability equal to or surpassing that of manual probing. In addition, the systems generate easy-to-read charts for patient education, elimi-

nating the need for chairside assistance during the periodontal examination.

Florida Probe

One system, developed at the University of Florida, uses constant probing force and interchangeable, autoclavable handpieces to record either pocket depth (using the gingival margin as the anatomical reference) or attachment level (using the occlusal surface of the tooth as the landmark). This system has been shown to detect changes of less than 1.0 mm with 99 per cent certainty.¹

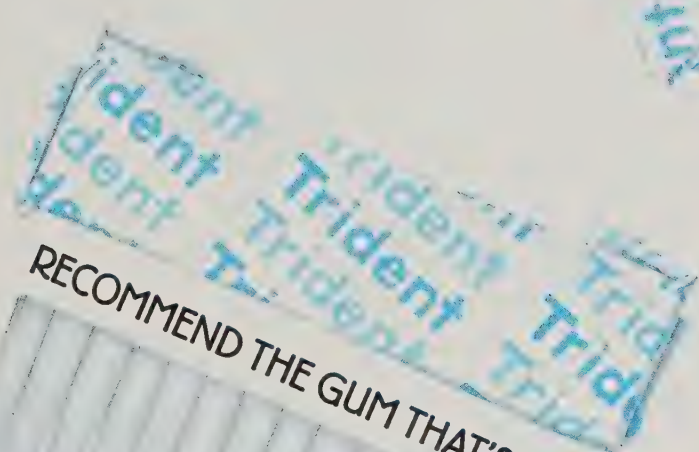
Controlled with a multipurpose foot pedal, the system transmits data directly from the handpiece to a computer. It can also record supplemental periodontal examination information such as gingival bleeding, tooth mobility, plaque scores and furcation involvement.

During an examination, the dentist and patient can review relevant periodontal information as it appears on the computer's screen. At the end of the examination, the system produces several comprehensive graphic and numeric charts of the patient's periodontal condition. These charts can be designed to highlight areas of significant change from a previous examination.

Interprobe

The Interprobe system (Bausch & Lomb Oral Care Division) uses a disposable probe tip to record pocket depth and gingival recession. Standard deviation is reported to be 0.5 mm. This system requires the practitioner to determine the clinical attachment level by combining pocket depth and recession measurements.

System components are housed in a small box, the exam controller, that fits on most dental bracket tables. A lighted panel on the front of the exam controller directs the practitioner through the examination, while a small screen displays data as it is being recorded. The dentist manually records mobility, gingival bleeding, suppuration and furca-



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TABLE I
Miller Mobility Scale

Miller Scale	Degree of Loosening	Periotest Value
0	No discernible movement	-08 to +09
I	Palpable movement	+10 to +19
II	Visible movement	+20 to +29
III	Movement on lip pressure	+30 to +50

(Courtesy of BioResearch)



Fig. 1: The Interprobe handpiece. (An optical encoder within the Interprobe handpiece scans and then records pocket depth.)

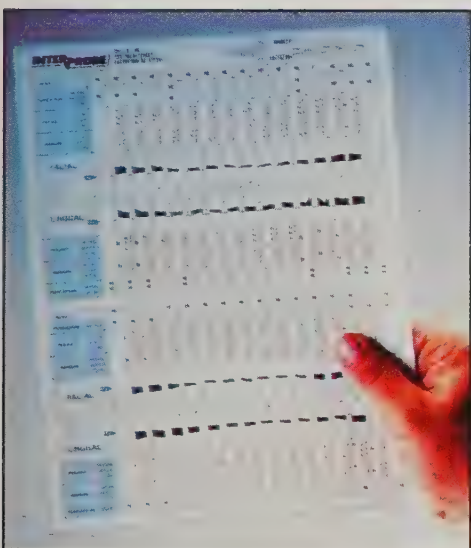


Fig. 2: Produced by the Interprobe system, this graphic chart allows the practitioner to document pocket depth, attachment loss, gingival recession, bleeding sites, suppuration, mobility and furcation involvement.

tion involvement into the exam controller.

At the conclusion of an examination, a computer-generated chart and accompanying graphics show the patient's periodontal condition. Changes in condition from prior examination data are



Fig. 3: The Florida Disk Probe uses the cusp tip as a reference point when recording attachment levels.



Fig. 4: The Florida Probe's tip is inserted into the gingival crevice. When appropriate pressure is applied, a sleeve automatically moves down the shank to contact the gingival margin. The probe automatically signals the distance from the top of the gingival margin to the depth of the pocket.

noted by visually comparing the data recorded on earlier charts. The Interprobe system also can be connected to a personal computer for data manipulation.

The Jeffcoat Probe

Named for its inventor, Dr. Marjorie Jeffcoat, this automated periodontal probe measures pocket depth and evaluates attachment level during periodontal examinations. A controlled-force probe locates the cementoenamel junction (CEJ) during periodontal probing and calculates the attachment level



Fig. 5: The tip of this semi-automated Jeffcoat Probe automatically locates the CEJ during periodontal probing and calculates the attachment level using the CEJ as a reference.

using the CEJ as a reference. The inventor claims that the resulting measurement is more accurate and objective than measurements obtained using other techniques.² At present, the cost of this probe confines its use to research centres.

Recording Pocket Temperature

Studies indicate a correlation between elevated pocket temperature and other clinical signs and symptoms of periodontal inflammation.^{3,4} Pockets with increased levels of suspected periodontal pathogens tend to have temperatures that are approximately 0.65°C higher than those of healthy sites. When these pockets are treated, their temperatures, as well as other clinical disease indicators, are reduced.

The PerioTemp (Abiodent) probe records the temperature of the periodontal pocket during manual probing. This system is calibrated with a baseline reading taken sublingually in the second mandibular molar area. Using this baseline, the system determines whether the sulcular temperature of a specific tooth is at, near or above the temperature of a comparable normal, healthy tooth. The naturally occurring temperature gradient from posterior to anterior (the anterior being cooler) has been factored into the system, which automatically compensates for the difference.

Small enough to fit on most dental bracket tables, the PerioTemp unit can also be used for patient education. A lighted, color-coded mouth chart on the front of the device's housing indicates the temperature range of the tooth, with green indicating normal; yellow, slightly above normal; and red, significantly above normal. A small thermal paper printer can be attached to make a



Fig. 6: By comparing pocket temperature to the patient's basal temperature, the PerioTemp system determines if the temperature of the specific tooth is at, near, or above the temperature of a compatible healthy tooth.

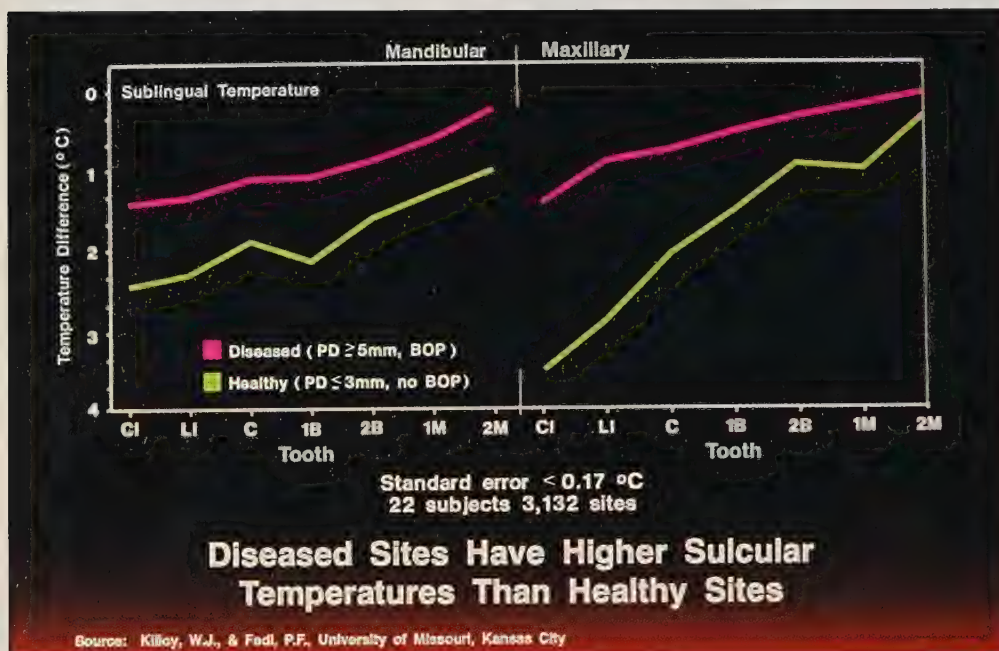


Fig. 7: A temperature probe study conducted at the University of Missouri, Kansas City, showed that diseased periodontal sites consistently had higher temperatures than healthy sites in both the maxillary and mandibular arches.

permanent record of the temperature examination, and printouts from various visits can be compared manually. Disposable probe tips connect to an autoclavable handpiece.

Mobility Testing

Tooth mobility and implant stability can be tested with the Periotest (BioResearch) probe, which uses a computer to measure and record the deceleration of the force applied to a tooth or implant.

Deceleration is proportional to mobility and the amount of periodontal support or osseointegration. The system provides more objective data than the traditional method of manipulating the tooth between two dental instruments and visually determining mobility.

With the device held perpendicular to the tooth or implant, the dentist activates a switch to begin a gentle tapping motion. A standard force is applied at a rate of approximately 16 taps over a period of four seconds. The computer

averages the deceleration data and displays the results on a small LED screen. A voice simulator in the system also announces the averaged score.

The Periotest value (PTV) reflects the movement of the implant or the shock-absorbing effect of the periodontium. These values have a defined correlation to the Miller Mobility Scale (see Table I).

The Future

Today's high-tech computerized probes have enhanced the dental practitioner's ability to diagnose periodontal diseases and monitor their treatment. In the future, diagnostic probes will likely be developed to take multiple assays of clinical, biochemical and microbiological data during a single pass through the periodontal tissues. Eventually, other computerized devices such as computer-assisted ultrasound and thermographic instruments will be used to analyze periodontal health without invading oral tissue.

Drs. Marilyn Miller and Thomas Truhe are co-directors of the Princeton Dental Resource Center, which is a nonprofit organization dedicated to the timely dissemination of new findings in dentistry. The center is supported by an educational grant from Mars, Incorporated. ■

References

1. Gibbs, C.H., Hirschfeld, J.W., Lewy, J.G. et al. Description and clinical evaluation of a new computerized periodontal probe – the Florida Probe. *J Clin Periodontol* 15:137-144, 1988.
2. Jeffcoat, M.K., Jeffcoat, R.L. and Captain, K. A periodontal probe with automated cemento-enamel junction detection – design and clinical trials. *IEEE Transactions on Biomedical Engineering* 38(4):330-333, 1991.
3. Kung, R.T.V., Ochs, B. and Goodson, J.M. Temperature as a periodontal diagnostic. *J Clin Periodontol* 17:557-563, 1990.
4. Fedi, P.F. and Killoy, W.J. Temperature differences at periodontal sites in health and disease. *J Periodontol* 63:24-27, 1992.



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Practice Management & Success

Quality Service and a Personal Touch: Redefining the "M" word

It doesn't seem to matter what the backdrop is – whether I'm at a rural Ontario practice doing a consultation or chatting with an urbane dentist informally at a cocktail party – the scenario is virtually the same. I mention the "M" word, marketing, and the teeth start clenching. It's little wonder why.

For many dentists, marketing is synonymous with the slick aura of Madison Avenue advertising agencies. Today, unfortunately, many people mistakenly equate marketing with selling – even my computer thesaurus suggests "selling" as another word for marketing. But selling and marketing are two very different things.

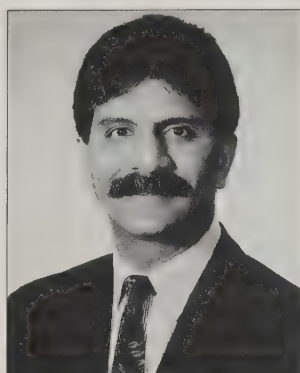
Although there is more than one accepted definition, marketing can be broadly described as "the development and efficient distribution of goods, services, issues, and concepts for chosen consumer segments." (*Foundations of Marketing*, Beckman, Kurtz and Boone.) Applied to the dental environment, marketing is about identifying and meeting the needs and wants of patients. It is not about selling and performing gratuitous dentistry.

What has become clear from the myriad of conversations I've had about marketing is this: it is not the pure essence of marketing – as defined above – that many dentists reject. It is the negative connotations of the word marketing. Once we've overcome the semantic hurdle and redefined (or realigned) marketing, we find much more common ground.

The Intangible Service

In terms of marketing, it's obvious that dentistry is providing a service rather than a product. What isn't so obvious is the value that patients place on dentistry relative to other services and products. When I suggest to dentists that people, in choosing to spend their discretionary dollars, may rank dentistry on a par with a salon hair cut, or even lower, discomfort surfaces. It's not that dentists aren't aware of this reality, they just wish it wasn't the case.

Because dentistry is often viewed as a consumer service – and not as some-



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President of
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thing that is essential to an individual's overall health – the profession needs to embrace the same marketing mind-set that other service providers use to build their businesses. In other words, they must provide quality service with a personal touch. These keys for unlocking the door to success are more important than ever in dentistry, and for three very good reasons.

First, the supply of dental services exceeds the demand for those services. As a result, many dentists are facing a busyness problem. Second, dentistry's focus has shifted. Today, there is much less emphasis on caries prevention than there is on caries restoration, and many of the services provided are based on a patient's wants rather than his or her actual needs. And lastly, dentistry is one of the first service industries to take a beating during recessionary times. The days of hanging up the shingle and expecting a steady patient flow are long gone.

Where to Concentrate Your Energy

In last month's column, I stated that the new patient experience is the first (and most important) opportunity to put your practice's best foot forward. Obviously, the next challenge is to turn those new patients into established patients. There's no point in providing a solid new patient experience if you don't ensure that subsequent patient experiences measure up. Yet this is precisely where many practices fail. They lure patients in, present a flawless first impression, and then drop the proverbial ball.

This phenomenon is certainly not unique to dentistry. Service providers are often so focused on generating new business (customers, clients, patients) that they neglect to take care of those they already have. This phenomenon, one of the biggest marketing blunders I know of, is described well in *Marketing Services: Competing Through Quality*, by Leonard L. Berry and A. Parasuraman:

"What the company does to nurture the relationship with the customer, to build it, to strengthen it, is crucial to the company's marketing effectiveness and efficiency. To work hard to attract new customers and then to be complacent in strengthening the relationship makes little sense."



The reason it makes little sense is simple. In focusing solely on attracting new business – and taking for granted those patients that you already have – you forfeit your greatest potential for profitability. A Fortune 500 article (June 1990), "What Customers Really Want," aptly stated that: "Long-established customers are the most profitable, because they buy more, refer new business, and usually are willing to pay higher prices."

This same logic applies to dentistry. When you satisfy your patients, you can expect to receive new patient referrals, greater case acceptance, and increased patient retention in return. Conversely, if you make a glowing first impression but fail thereafter, you'll be met with a low referral rate, limited case acceptance and a high patient attrition rate.

Marketing to Current Patients

What I propose is an internal marketing strategy that revolves around your existing patients. Unfortunately, this tactic is frequently misused or not used at all. (Many practices market internally, but their strategies are dictated by their own ideas about what's best, and ignore the views of their patients.)

Internal marketing, basically, revolves around providing quality service and personalized care. The beauty of this strategy is that it does not carry a hefty price tag, either in terms of staff time or money. Even so, a cost-benefit analysis usually indicates that the benefits – to both the practice and patients – far outweigh the costs.

There are certain activities that dental practices can universally adopt to send the right messages to patients. Examples of such "basics" range from follow-up contact with patients who have undergone involved treatment, to providing an attractive office decor, to sending thank you notes or gifts to patients who refer their family, friends and colleagues. Such gestures, rooted in commonsense, are important. But they're really just the beginning.

Before you chart the direction of your internal marketing strategy, you need to know what your patients really want and value. Unlike any number of other businesses, a dental practice has a good handle on its market – current patients. By examining your practice records, you can determine exactly who these individuals are, where they come from, and when you last saw them. But you might not know what they want, and that's the key to developing an internal marketing plan.

Profiling Your Patients

You probably possess a good deal of information about your patients, particularly with regard to demographic variables such as age, sex, marital status, occupation, income level, and geographical location, etc. This is valuable in that it tells you who your patients are. But you also need to know what your patients think and feel. In marketing jargon, this is known as psychographics, "a market segmentation based on the activities, interests and opinions (the lifestyle) of consumers." (*Canadian Advertising in Action*, Keith J. Tuckwell.)

Psychographics are useful in that they reveal information that isn't exposed by pure demographic data. They

serve to further differentiate your market. Here's an example. Let's assume that you have two 30-year-old female patients. Both are single, both work as corporate lawyers and they both live on the same block. Using demographics alone, you would lump these two women together in the same target market. But if you relied on psychographics to delve deeper, you might find that their profiles branch off in different directions. One woman might base her consumer decisions on the latest available information, while the other could value familiarity and loyalty.



Today's corporations are placing more and more emphasis on psychographics in their market research. Although it may be practical for megacompanies to allocate a significant portion of their annual budget to obtaining this kind of information, many other businesses, including most dental practices, have limited resources to spend in this area. It's possible to extract psychographical information without contracting an independent market research firm, however.

Probing Your Patients

One of the most valuable tools for gauging your patients' attitudes is to send out a patient questionnaire. This gives you an opportunity to find out everything you need to know but were afraid to ask. For example, do your patients place their oral health in your hands because you're an excellent communicator, because you're conveniently located or because your practice is a hallmark of high-tech dentistry? What amenities do they value in your practice? Is it more important for your patients to have access to a fax machine or a colorful children's area?

A patient questionnaire can provide untold insight into your patients' needs and wants. To increase its effectiveness, mail the questionnaire to patients with

a self-addressed, stamped envelope and keep it anonymous. You'll get a higher response rate and more honest answers by doing so.

There are other information-gathering vehicles that you should use to guide your marketing decision making. Start by creating an environment of open dialogue with your patients. Make them feel comfortable about offering their opinions, criticisms, and ideas – at any time. Think about placing a suggestion box in your reception area, or printing a message in your patient newsletter requesting input. This information can then be used to identify the needs, wants, and problems of your patients so that they can be addressed.

Providing an atmosphere of quality and personalized service, by taking a general interest in patients and communicating with them as individuals, is imperative. A former dentist recently told me about one of the tools his team used. They recorded relevant details – which arose in informal discussions with patients – in the patients' charts. For example, if a patient was on the verge of graduating from university at their last recall appointment, this fact served as a springboard for a future, personalized discussion at the next visit.



Summary

Like it or not, dentistry is a service that patients (the consumers) may choose to reject. It's up to individual dentists to convince patients that their oral health should rank as a top priority. To achieve this goal, dental professionals must make a commitment to provide quality and personalized service. And this begins by developing and implementing a marketing strategy that defines and tracks patients' seemingly elusive needs. ■

Specialty Feature

Adult Dental Health In the Keewatin

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ABSTRACT

In 1990, as part of a major health status assessment, a dental survey was carried out on a 20 per cent random sample of the adult population in the Keewatin region of the Northwest Territories. A 73 per cent response rate was obtained. Of the 397 people examined, 334 (88 per cent) identified themselves as Inuit. More than 20 per cent of the respondents were edentulous, including 10 per cent of those 18 to 34 years old. The median DMFT was 24 for all respondents and 21 for dentulous respondents. There was a significant difference between Inuit and non-Inuit respondents, which was most marked in the 18 to 34 year old age group (mean DMFT 22.1 versus 15.6, $p < .001$). The proportion of filled to decayed and filled surfaces (F/DF) was 50 per cent. Periodontal disease was common and increased with age. More than 73 per cent of the dentate individuals had gingival bleeding at one or more sites. Very few were free of calculus. Mean pocket depth increased with age (1.3 mm at 18-34 years of age, rising to 2.3 at 55 plus, $p < .001$). Sixty per cent of adults needed at least one restorative procedure, 68 per cent needed prophylaxis, and 45 per cent needed periodontal treatment. Men required more treatment of all types than women.

The results of this study confirm the clinical impression that dental disease is rampant among the Inuit population. There are major needs for both preventive and treatment services. The study is sufficiently representative to serve as a baseline to measure the improvements that may result from modifications to the dental care programs instituted by the Keewatin Regional Health Board.

SOMMAIRE

En 1990, dans le cadre d'une grande étude sur la santé, on a effectué, dans le district du Keewatin des Territoires du

Nord-Ouest, un sondage auprès de 20 p. cent des adultes choisis au hasard. Le taux de réponse fut de 73 p. cent. Sur les 397 sujets examinés, 334 (88 p. cent) se disaient des Inuit. Plus de 20 p. cent étaient édentés, y compris 10 p. cent de ceux qui avaient de 18 à 34 ans. Le nombre moyen de dents CAO étaient de 24 parmi tous les sujets examinés et de 21 parmi les édentés. On a noté une grande différence entre les Inuit et les non-Inuit, surtout dans le groupe des 18 à 34 ans (moyenne CAO de 22,1 contre 15,6 $p < .001$). Le rapport surfaces obturées/surfaces cariées et obturées étaient de 50 p. cent. Les maladies du parodonte étaient nombreuses et augmentaient avec l'âge. Plus de 73 p. cent des sujets dentés saignaient aux gencives à au moins un endroit. Très peu n'avaient nul calcul dentaire. La profondeur moyenne des sillons gingivaux augmentaient avec l'âge (1,3 mm chez les 18 à 34 ans, 2,3 mm chez les 55 ans et plus, $p < .001$). 60 p. cent avaient besoin d'au moins une restauration, 68 p. cent avaient besoin de soins prophylactiques et 45 p. cent avaient besoin de traitements parodontaux. Les hommes avaient besoin plus que les femmes de traitements de toutes sortes.

Les résultats de ce sondage ont donc confirmé l'impression clinique qu'on a au sujet de la santé dentaire des Inuit: ils ont de nombreuses maladies dentaires et ont grandement besoin de soins de prévention et de restauration. L'échantillonnage a été suffisamment représentatif pour qu'on puisse utiliser ces résultats afin de mesurer les améliorations qui pourront avoir lieu à la suite des changements apportés au programme de soins dentaires mis en oeuvre par le Service de santé régional du Keewatin.

Mots clés

Santé (hygiène) dentaire, adulte, Inuit, épidémiologie.

Key Words

Dental health, Adult, Inuit, Epidemiology.

Dental disease is a major but too often overlooked or misunderstood cause of morbidity. It is closely linked to both nutrition and dietary habits, as well as to the availability of dental preventive and treatment services. In Canada's native communities, dental health is generally far below the level seen in non-native populations.^{1,2} While there have been a number of studies on native dental health in the far north, many of them have examined only children, and few have been conducted in the last decade. This paper reports the adult dental component of a comprehensive health status survey undertaken in the Keewatin region of the North West Territories (NWT) in 1990.

Keewatin takes in more than 500,000 square km of low-relief tundra and rocky shoreline along the west coast of Hudson's Bay, extending from the Manitoba border to the Arctic circle (Fig. 1). Health services for the region are provided by the Keewatin Regional Health Board, which also provides these services to the Belcher Islands, located off the southeast coast of Hudson Bay. Most of the 5,500 people in this vast region are Inuit. There are eight communities in the Keewatin, the largest being Rankin Inlet (pop 1,459) and the smallest Whale Cove (pop 224).

Professional dental services have been available in the Keewatin for the last 20 years. In 1979, the University of Manitoba Dental School was contracted to provide fly-in dental services. For the most part, these services were provided through a dentist based in Churchill, where operating room facilities for dental surgery and a four-chair, fully-equipped dental clinic are available. With limited time to spend in each com-

munity, the fly-in dental clinics have been almost exclusively devoted to treatment rather than preventive activities.

During the past 10 years, dental therapists – many of them long-term residents – have also been stationed in the Keewatin communities, primarily to work with school-aged children. These therapists have received two years of specialized training, which enables them to perform restorative procedures, remove teeth, perform cleaning and prophylaxis, and undertake other basic functions including school educational programs. They are supervised by dentists at the School of Dental Therapy in Prince Albert, Saskatchewan (affiliated to the University of Toronto), who perform the initial examination of each patient and develop the treatment plans.

The Keewatin Regional Health Board (KRHB) was created in 1988 to take on regional responsibility for health services. It didn't take the board long to realize that there was a need for a wide range of local health information to support the planning and administration of new programs, and the Northern Health Research Unit (NHRU) of the University of Manitoba was approached for assistance. A major health survey was undertaken as a joint project, with the KRHB closely involved in both the formulation and implementation of the survey.

Methods

The survey was conducted between April and October 1990. Because there was no accurate count of the Keewatin population, an initial "census" was carried out in the region's eight communities. This preliminary survey collected demographic information from every household, with essentially 100 per cent coverage. From this enumeration, a 20 per cent random sample was drawn, and these people were invited to participate in the more intensive individual questionnaire and physical examination. There were a number of additional volunteers who took part in the individual survey. Their results have not been included in this analysis.

The individual questionnaire was administered in either English or Inuktitut (the respondent's choice) by research assistants recruited from the community and trained by the NHRU. Data on demographics, diet, traditional activities, and health knowledge were included. The questionnaire was pre-tested and back-translated to ensure

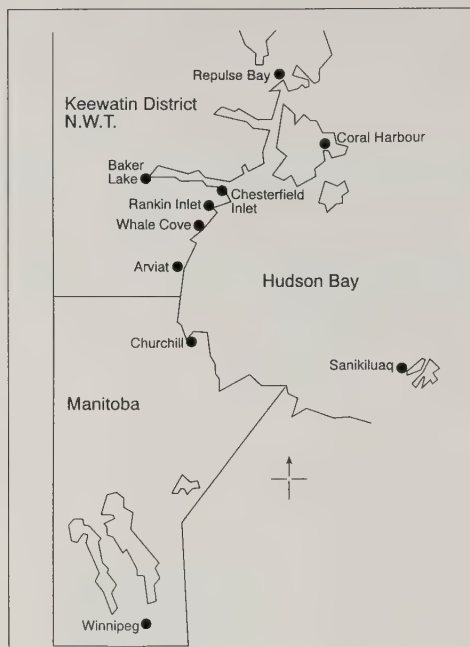


Fig. 1: Keewatin extends from the Manitoba border to the Arctic circle.

that the questions were culturally meaningful.

One of the authors, Dr. Gordon Thompson, coordinated the methodology and format of the dental section. The examination format was based on methodology developed by the Canadian Dental Association for the proposed National Epidemiology Project, a national dental survey. Our results can therefore be compared to future national and provincial data.

Examinations were carried out by four calibrated dentists, although most were performed by one individual. The examiners were equipped with a dental chair, compressed air, lamp, number 5 explorer, dental mirror, and an NIDR periodontal probe (GC-12). Decayed, missing, and filled teeth and surfaces (DMFT and DMFS), including third molars, were recorded using the World Health Organization (WHO) criteria for diagnosis of caries,³ as modified for the National Dental Epidemiology Project.⁴ Periodontal indices were scored for each tooth, including indices of gingival

bleeding (0 or 1), and calculus (0 to 2), as well as pocket depth.⁵ The examining dentist also assessed treatment needs. Participants were told what treatment needs had been found, if any, and were referred to the local dental therapist or the visiting dentist.

Dental data obtained in the survey was stored on computer. DMF indices were compiled at the Department of Dental Health Care, University of Alberta, while the household and individual survey data were entered at the University of Manitoba. Inconsistent responses were checked against the original survey booklets. After linking the three databases, statistical analyses were performed at the University of Manitoba using SAS. T-tests were used to compare means, and chi-squares to compare proportions. For each of the periodontal indices, two summary variables were evaluated for each individual. First, it was determined whether or not the individual was free from calculus (or bleeding) at all sites. Second, the individual's "average index score" was calculated by taking the mean score for all teeth present.

Results

Dental examinations and questionnaires were completed on 397 adults from the random sample (73 per cent response rate). The age distribution (Table I) reflects the broad-based population pyramid in the Keewatin: in the adult sample, respondents ranged from 18 to 80 years of age, but had a mean age of 36.5 (s.d. 14.7). Men and women were approximately equally represented. By self-identification, 88 per cent (334) were Inuit, including all but one of those over 55 years old (see Table I).

Just over 20 per cent of the adult sample were completely edentulous, and only 20.9 per cent had 28 or more teeth (i.e. 28 teeth plus third molars, if present). The level of edentulousness increased with age, but was about 10

TABLE I
Age and Gender Distribution

Age	18-34 Years (non-Inuit)	35-54 Years (non-Inuit)	55+ Years (non-Inuit)	Total (non-Inuit)
Female	112 (11)	70 (3)	30 (1)	212 (15)
Male	105 (14)	52 (16)	28 (0)	185 (30)
Total	217 (25)	122 (19)	58 (1)	397 (45)

*There were 18 missing answers for race.

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References:

1. Hanna JJ, Johnson JD, Kufnec MM. Clinical evaluation of sanguinaria-containing toothpaste and oral rinse. American Journal of Orthodontics and Dentofacial Orthopedics, 1989, Vol. 3: 199-207
2. Harper DS, Mueller LJ, Fine JB, Gordon J, Laster LL. Clinical efficacy of a dentifrice and oral rinse containing sanguinaria extract and zinc chloride during six months of use. J Periodontol, 1990; 61: 352-358



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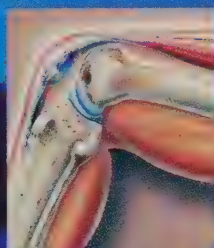
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TABLE II
Dental Health

Age	Mean # of Teeth (s.d.)	% Edentulous	Mean Dentate DMFS (s.d.)	Mean Dentate DMFT (s.d.)
18-34	21.7 (9.7)	9.7%	72.7 (42.1)	20.3 (7.2)
35-54	13.2 (10.8)	30.3%	94.9 (44.2)	20.5 (7.6)
55+	7.4 (8.4)	43.1%	119.4 (41.9)	22.2 (7.2)
Total	17.0 (11.3)	20%	83.6 (45.3)	20.5 (7.4)

per cent even in the youngest adults (18-34 years old). Women were significantly more likely to be edentulous than men (30.2 per cent versus 10.3 per cent, $p < .001$). The higher proportion of edentulousness among the Inuit respondents (22 per cent versus 13 per cent for non-Inuit) is of practical though not statistical significance due to the small numbers of non-Inuit involved in the study. **Table II** summarizes the dental health of this population.

The median DMFT observed for all adults was 24. Only one individual, a middle aged Inuit woman, had a DMFT score of 0. For dentate individuals, the median DMFT was 21, ranging from 21 in 18-34 year olds to 23 in those 55 years of age and older. The Inuit respondents had significantly higher DMFT scores than the non-Inuit (mean 23.1 versus 19.7, $p = .01$). However, this difference was confined to the 18-34 year old age group (mean 22.1 versus 15.6, $p < .001$). There was no significant difference by race for middle-aged adults (mean 23.4 for Inuit versus 24.4 for non-Inuit, $p = .6$). Only one non-Inuit 55 years of age or older participated in the study. Among dentate persons, the difference in DMFT scores for women and men approached significance (21.3 versus 19.8, $p = .08$), however, there was no significant difference by gender in the DMFS scores (87.5 versus 80.2, $p = .15$). The distribution of DMFT scores by age is shown graphically in **Fig. 2** and **Table 2**. **Figures 3** and **4** break down DMFT by gender and components.

The proportion of filled to decayed and filled surfaces (F/DF) was about 50 per cent in both young and middle-aged adults (mean 58 per cent for young adults and 48 per cent for middle-aged adults). In dentate individuals over 55

years, however, this fell to a mean of nine per cent. Very few had a F/DF ratio of 100 per cent, i.e. all decayed lesions filled (12 per cent of young adults, 14 per cent of adults 35-54 years old, and zero per cent over 55 years).

Periodontal disease (see **Table III**) was widespread in general, and became even more prevalent with age. Overall, 73 per cent of dentate individuals had gingival bleeding at one or more sites, rising to 88 per cent in those 55 years and older. The average gingival bleeding score was 1.0 (i.e. the majority of sites bled) for 36 per cent of young adults, 45 per cent of middle-aged adults, and 64 per cent of those over 54 years old. Twenty per cent of young adults were calculus-free on all tooth surfaces, falling to 10 per cent of adults 35-54 years, and zero per cent of those over 54 years old. Half of the young adults had an average calculus index of 0.0 (i.e. where the majority of sites were calculus free). However, all individuals 55 years of age or older had an average index of at least 0.5, and almost half averaged 1.0. Mean pocket depth in-

creased significantly with age (1.3 mm at 18-34 years of age to 2.3 at 55 plus years, $p < .001$).

Women were more likely to have a lower average calculus index than men (50 per cent scored 0.0, versus a score of 33 per cent for men, $p = .01$), although the proportion who were calculus-free was similar (19 per cent for females versus 12 per cent for males). The average pocket depth was also less for women (1.4 versus 1.6, $p = .02$). A significantly greater proportion of women had gingival bleeding at one or more sites (34 per cent versus 20 per cent, $p = .007$), although there was no difference in the average gingival bleeding index.

Inuit and non-Inuit periodontal health was compared only in young and middle-aged adults, as there was only one non-Inuit in the 55 plus years of age category. Significant differences were evident mainly in the young adults. The proportion of calculus-free individuals was significantly different only in young adults (Inuit 16 per cent versus non-Inuit 52 per cent, $p < .001$). Similarly, mean pocket depth differed significantly only in young adults (Inuit 1.37 mm versus non-Inuit 1.12 mm, $p = .01$). Gingival bleeding at one or more sites differed in both young and middle-aged adults (78 per cent versus 40 per cent for 18-34 year olds, $p = .001$; 73 per cent versus 43 per cent for 35-54 year olds, $p = .06$).

Sixty per cent of the adults examined were in need of at least one restorative procedure – 68 per cent needed dental prophylaxis, and 45 per cent needed periodontal treatment. Eight per cent were eligible for a fixed prosthesis, and about half (54 per cent) for a new or replacement removable prosthesis. Younger adults had the largest burden

TABLE III
Periodontal Health (Dentate Individuals)

Age	% with all surfaces calculus free	% with no gingival bleeding	% with average pocket depth > 3 mm	mean pocket depth (s.d.)
18-34 N = 196	20%	27%	0%	1.3mm (.6)
35-54 N = 87	10%	33%	2%	1.6mm (.9)
55+ N = 33	0%	12%	9%	2.2mm (1.1)
Total N = 316	15%	27%	2%	1.5mm (.8)

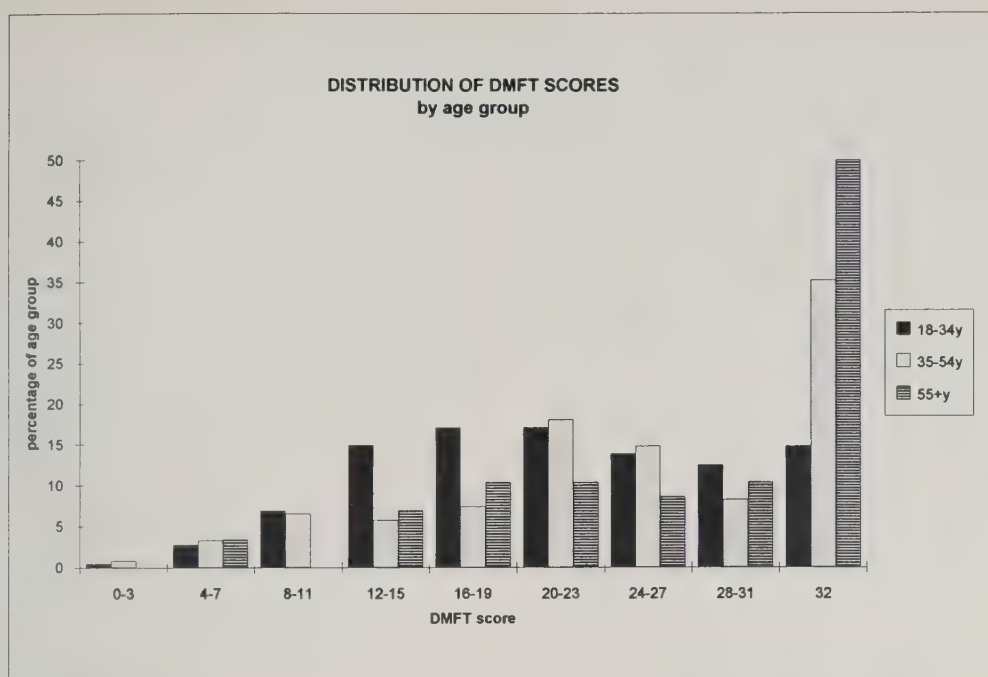


Fig. 2: Distribution of DMFT Scores by age group

of need, and all treatment needs – other than dentures – declined significantly with age (due to the increasing number of missing teeth).

Men were consistently more likely to have unmet treatment needs. They were more likely to need restorative work (69 per cent versus 53 per cent for women, $p = .001$) as well as prophylaxis (78 per cent versus 60 per cent for women, $p < .001$). Sixty per cent of men versus 40 per cent of women were in need of periodontal treatment ($p < .001$). However, there was little difference by gender in the need for prosthetics. Interestingly, there was no significant difference by race in the need for either dental prophylaxis or periodontal treatment. However, Inuit respondents were more likely to have unfilled caries (63 per cent versus 38 per cent for non-Inuit, $p = .001$).

Discussion

The rate of dental disease is extremely high in Keewatin adults of all ages. These findings are consistent with both clinical impressions and other surveys of adult Inuit populations in Canada and elsewhere. It is particularly disturbing that even the youngest adults have very high levels of dental disease.

While this study was cross-sectional, the results can be placed in the context of the "epidemiologic transition"⁶ evident in the literature on Inuit dental health. Although there have been few longitudinal studies, a pattern of distinct dental health phases is apparent in

surveys of different communities at different times. The specific timing of these phases has varied with the timing of the Inuit population's change over from a traditional diet of wild meats and fish to a southern-style diet high in sugar, refined carbohydrates, and fat.

Surveys conducted in Alaska and Greenland in the early 1900s showed the Inuit, along with other aboriginal peoples living a traditional lifestyle, had excellent dental health – minimal caries, and little tooth loss even in old age.^{7,8} Studies conducted during the period when Southern, highly cariogenic foods were first becoming available in the North found marked differences within Inuit communities along dietary lines. In several studies, a marked age differential was apparent. Parents and grandparents, still eating a more traditional diet, had better teeth or a slower decline in oral health than children raised on store-bought foods.^{9,10,11} In the third phase, residents of communities such as those in Keewatin, where Southern foods have been available for some time and are widely used, have a uniformly poor level of oral health.^{9,12} Whether a fourth stage will appear, in which preventive measures in diet, oral hygiene, and dental care will reduce the burden of illness, remains to be seen. Reductions in the caries burden of children in Greenland¹³ may be an early indication of this.

In this survey, 52 per cent of adults reported that only half or less of their meat came from the land and only 12

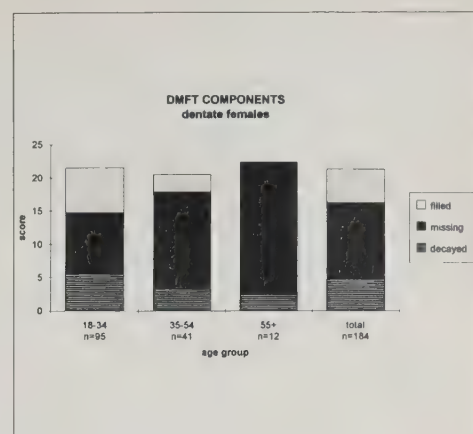


Fig. 3: DMFT Components - dentate females

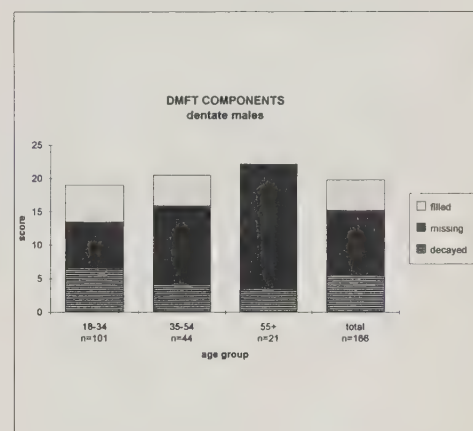


Fig. 4: DMFT Components - dentate males

that per cent ate traditional meats (e.g. caribou) exclusively. Younger adults, in particular, reported consuming large quantities of sweets, chips, and other "junk foods," but these items were also eaten extensively in all age groups. While we have no directly comparable data, this is certainly a dramatic change relative to the situation that existed a few decades ago. Sporadic contact with explorers and whalers in the Keewatin goes back to the late 1500s, but Southern foods were not available with any regularity until 1911, when the first permanent trading post was established at Chesterfield Inlet. It was not until the 1950s that the Keewatin Inuit left the land for permanent settlements, however. The 55 plus year-olds in our survey were young adults at that time. Since then, Southern foods have been accessible year-round. Pop, candy, and other snacks are often among the cheapest food items available, while milk and vegetables are prohibitively expensive for many families.

The U.S. National Survey of Oral Health in Employed Adults and Seniors 1985-86¹⁴ is one of the few recent, large, community-based surveys of adult dental health in North America.

There are no Canadian surveys in this category. Differences in the methodology and sampling frame (the sample was comprised of employed adults and users of seniors' day centres, versus the true community random sample used in the Keewatin survey) make direct comparisons difficult, yet there are few alternatives available.

The per cent of adults who were edentulous in Keewatin is far in excess of that seen in the U.S. survey (17 per cent of Keewatin 18-54 year olds versus 4.2 per cent of U.S. employed adults of 18-65 years or older; 43 per cent of Keewatin 55-plus year olds versus 41 per cent of U.S. 65-plus year olds). Unfortunately, the U.S. survey reported decayed and filled surfaces only, rather than DMF scores. Because missing teeth were not as prevalent in the U.S. as they were in the Keewatin survey, a comparison of the DF components alone would give a somewhat misleading picture. However, the proportion of filled to decayed-and-filled surfaces was 51 per cent overall in the Keewatin, considerably lower than that seen in the U.S. survey, where the mean F/DF was 82 per cent for 18-64 year olds. Periodontal health was also worse in the Keewatin. Only 43 per cent of employed U.S. adults had gingival bleeding at one or more sites, versus 73 per cent of Keewatin adults. The mean pocket depth for all U.S. employed persons was 1.3 mm, versus 1.5 mm for all adults in the Keewatin. Methodological differences make comparisons of calculus and tooth mobility infeasible.

Despite the fact that women in the Keewatin generally had worse DMFT scores than men, they were noted to have fewer outstanding treatment needs. This discrepancy is due mainly to the greater prevalence of missing teeth (particularly complete edentulousness) and to a lesser extent filled teeth, supporting the clinical impression that women obtain dental treatment more often than men. We speculate that this gender difference relates to the fact that children are usually brought for dental treatment by their mothers, who can thus access treatment for themselves more easily than men can. It is worth emphasizing that despite their apparently greater access to dental treatment, women still have evidence of a greater total burden of dental disease. In isolation from preventive services, treatment alone has been insufficient to control ongoing dental decay.

In southern Canada, extensive public

dentistry measures have been necessary to control the caries associated with consuming a typical "Western" diet that is high in refined carbohydrates. These measures have included the fluoridation of public water supplies, the provision of professional preventive care, and the vigorous promotion of personal oral health activities, such as tooth brushing with fluoridated toothpaste. The periodontal health status of the adults in this survey would seem to indicate that these preventive habits have not yet been incorporated into the Keewatin way of life, despite dramatic dietary changes.

Optimal fluoridation of public water supplies does not require individual action, and is a well-proven intervention in Southern communities. None of the communities in the Keewatin have fluoridated water supplies, and the natural fluoride level is low throughout the region at less than 0.2 parts per million of fluoride.¹⁵ Fluoridation poses technical problems in the Arctic climate, particularly in small communities where water is usually delivered by truck rather than via common mains. There has been at least one study of this issue in the Northwest Territories, which recommended a variety of potential engineering solutions.^{15,16} However, cultural factors may decrease the effectiveness of public water fluoridation in the Keewatin. Many Inuit families prefer to drink water (or melted ice) from free-flowing sources such as rivers, lakes, or the salt-free sea ice rather than from "stagnant" reservoirs and holding tanks. Thus, while 95 per cent of households have running water, these public supplies may be used mainly for washing and other household needs rather than drinking. Currently, some infants receive fluoride supplementation, but this is a very recent phenomenon. Fluoride may also be present in tea, canned foods, and other imported items, but adults benefit little from these systemic sources.

There have been a number of studies of tooth morphology in Inuit populations, which have postulated that the Inuit may be particularly susceptible to caries. Mayhall¹⁷ and others have discussed the propensity toward a large number of complex grooves and cusps on the occlusal surfaces, as well as deep buccal pits lacking an enamel lining on molars. While this may certainly aggravate the effects of a highly cariogenic diet, it does not preclude the hope that the Inuit may regain good dental health.

Conclusions

While dental services are free to status aboriginals and to some government employees in the Keewatin, to date these services have been almost exclusively treatment oriented. At the time of this survey, there were no preventive clinical or health promotion services targeting adults, despite the extremely high rates of preventable dental disease. Supplementary health promotion/education expertise is needed to develop an appropriate dental health promotion strategy for the adult population of the Keewatin. Strategies must also be developed to increase the level of clinical preventive dental services.

Fluoridation of public water supplies may not be as effective in the Keewatin as it is in the South, but this measure deserves careful consideration as lifestyles continue to change in the North. Meanwhile, culturally appropriate alternatives to increase the systemic intake of fluoride should be given high priority. A promising alternative is fluoride supplementation for all infants and children. To increase the effectiveness of this strategy, a "dental health worker" could be employed in each community to administer the supplement through daily visits to each household with infants and pre-school children. Other possibilities include the fluoridation of salt or another staple food, and ensuring that imported foods and beverages are prepared with fluoridated water. Of course, fluoridation strategies of any kind would impact on the dental health of future generations rather than on the dental health of present-day adults.

It is crucial for dental programs in the north to acknowledge the cultural context in which this dental epidemiological transition has taken place. Traditionally, there was little need to even consider one's oral hygiene, and few or no foods could be labelled as "bad." This attitude was a valid one as recently as a generation or two ago. Thus, there is potential for educational (and treatment) programs imported from the South, particularly those directed at adults, to be perceived as irrelevant. There are already some health promotion programs developed specifically for the Canadian North that are designed to be harmonious with traditional aboriginal ideas about health, food, and parenting. Dental health programs should build on these efforts.

One of the most difficult aspects of this issue is the complex relationship between dental health education, tradi-

tional concepts of health, and the northern economy, with its limited jobs and high prices for store-bought foods as well as hunting equipment. It is not sufficient to give people information about dental decay and its risk factors. Improving people's real ability to obtain a healthy diet – whether traditional or southern – and participate in preventive care is fundamental to improving dental health in Keewatin. A Northern subsidy or voucher system for selected "healthy" foods, and/or a "hunters' allowance" toward the cost of gas, ammunition, and so on might be considered in the short term. Economic development, better education and job training, and efforts to integrate Inuit culture into modern life are broad strategies that would have an indirect impact on multiple aspects of health, including dental health.

Many of the adults in this survey were children when dental services first became available in Keewatin, yet they still have deplorable oral health. This underscores the great need for a comprehensive prevention and treatment program. The current level of clinical services in Keewatin must be increased in order to meet existing treatment needs. However, concerted efforts in community-wide prevention, dental health education, clinical prevention, and broad aspects of health promotion are even more essential if these levels of dental disease are to be curtailed. ■

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References

1. Young, T.K. *Health Care and Cultural Change: the Indian experience in the Central Subarctic*. Toronto: University of Toronto Press, 1988.
2. Leake, J.L. *Oral Health Survey of Canadian Aboriginal Children Aged 6 and 12*. Toronto: University of Toronto, 1992.
3. World Health Organization. *Oral Health Surveys: Basic Methods*. 3rd edition. Geneva: WHO, 1987.
4. Canadian Dental Association. *National Dental Epidemiology Project*. Ottawa: Canadian Dental Association, 1990.
5. National Institute of Dental Research. *Oral Health of United States Adults*. Bethesda: NIDR, 1987.
6. Omran, A.R. The epidemiological transition – a theory of the epidemiology of population change. *Millbank Mem Fund Quarterly* 49:509, 1971.
7. Price, W.A. Eskimo and Indian Field Studies in Alaska and Canada. *JADA* 23:417-437, 1936.
8. McEwan, C.S. An Examination of the Mouths of Eskimos in the Canadian Eastern Arctic. *CMAJ* 38:374-377, 1937.
9. Bang, G. and Kristoffersen, T. Dental Caries and Diet in an Alaskan Eskimo Population. *Scand J Dent Res* 80:440-444, 1972.
10. Mayhall, J.T. The Oral Health of a Canadian Inuit Community: an Anthropological

Approach. *J Dent Res* 56 (special issue C):C55-C61, 1977.

11. Schaefer, O., Timmermans, J.F.W., Eaton, R.D.P. et al. General and Nutritional Health in Two Eskimo Populations at Different Stages of Acculturation. *Can J Pub Health* 71:397-405, 1980.

12. Moller, I.J., Poulsen, S. and Nielsen, V.O. The Prevalence of Dental Caries in Godhavn and Scoresbysund Districts, Greenland. *Scand J Dent Res* 80:169-180, 1972.

13. Jakobsen, J. Recent Reorganization of the Public Dental Health Service in Greenland in Favor of Caries Prevention. *Community Dent Oral Epidemiol* 7:75-81, 1979.

14. U.S. Department of Health and Human Services. *Oral Health of United States Adults – the National Survey of Oral Health in U.S. Employed Adults and Seniors 1985-1986*. NIH pub # 87-2868. August 1987.

15. Marianayagam, C.C., Murray, M.L. and Heinke, G.W. *Dental Health and Fluoridation in the Northwest Territories*. Yellowknife: Department of Municipal and Community Affairs, Government of the Northwest Territories. Nov. 1988.

16. Murray, M.L. and Heinke, G.W. *Fluoridation of Water Supply Reservoirs in the North West Territories*. Yellowknife: Department of Municipal and Community Affairs, Government of the Northwest Territories. Nov. 1988.

17. Mayhall, J.T. Canadian Inuit Caries Experience 1969-1973. *J Dent Res* 54:1245, 1975.

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Indian and Inuit Dental Care in Canada: The Past, The Present, and The Future

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Summary of Legislative History

The legal mandate for the provision of health services to Canada's native people has never been definitively established by legislation. In fact, the wording of many of the key acts is ambiguous and sometimes appears contradictory. It is often unclear which act or clause takes precedence over others. As a result, native organizations and the federal government have very different perceptions of Canada's responsibilities in this area. The provinces have tended to stay out of the debate, which in itself is instructive.

Arguments about the legal mandate for the provision of native health services usually refer to one or more of the following:

1. The Royal Proclamation of 1763
2. The BNA Act of 1867 (now known as the Constitution Act)
3. The Indian Act of 1874 and its amendments
4. Treaty No. 6 of 1876 (and perhaps later Treaties)
5. The Charter of Rights and Freedoms of 1982, enshrined in the Constitution of Canada
6. The Canada Health Act of 1984

Treaty Number 6 (1876)

Signed by Canada and the Cree of central Alberta and Saskatchewan, this treaty contains the "medicine chest" clause that forms the nucleus of Indian claims to health care as a right. It states that: "A medicine chest shall be kept at the house of each Indian agent for the use and benefit of the Indians at the direction of such agent."

This is the only written treaty that defines the responsibilities of the federal government with regard to native health care services, but oral equiva-

lents are believed to exist in Treaties 8, 10, and 11.

Canada Health Act (1984)

Section 10 of the Canada Health Act states that: "The health care insurance plan of a province must entitle 100 per cent of the insured persons of the province to the insured health service provided for by the plan on uniform terms and conditions." The accepted interpretation of this section is that Indians are entitled to insured hospital and medical services on the same basis as all other residents.

The Canada Health Act, however, insures diagnostic and treatment services only. In effect, the federal government provides a uniform per capita block grant for insured services. The provinces, at their discretion, then provide other services to some or all residents.

The Federal Government Position

The 1979 Indian Health Policy (IHP) is the basis for the current design and direction of Canada's Indian Health Services (IHS) program. Major sections of this policy include statements that:

"The federal Indian health policy is based on the special relationship of the Indian people to the federal government, a relationship which both the Indian people and the government are committed to preserving...

"The 1979 policy rests on "three pillars"... The first, and most significant, is community development, both socioeconomic development and cultural and spiritual development, to remove the conditions of poverty and apathy which prevent the members of the community from achieving a state of physical, mental, and social well-being.

"The second pillar is the traditional relationship of the Indian people to the federal government, in which the federal government serves as advocate of

the interests of Indian communities to the larger Canadian society and its institutions, and promotes the capacity of Indian communities to achieve their aspirations...by encouraging their greater involvement in the planning, budgeting and delivery of health programs.

"The third pillar is the Canadian health system. This system is one of specialized and interrelated elements, which may be the responsibility of federal, provincial or municipal governments, Indian bands, or the private sector. But these divisions are superficial in light of the health system as a whole. The most significant federal roles in this interdependent system are in public health activities on reserves, health promotion, and the detection and mitigation of hazards to health in the environment. The most significant provincial and private roles are in the diagnosis and treatment of acute and chronic disease, and in the rehabilitation of the sick. Indian communities have a significant role to play in health promotion, and in the adaptation of health services delivery to the specific needs of their community...The federal government is committed to maintaining an active role in the Canadian health system as it affects Indians. It is committed to encouraging provinces to maintain their role and to filling gaps in necessary diagnostic, treatment, and rehabilitative services."

The Indian Position

The position of Canada's Indian people has always been clear, consistent and unequivocal: The right to health care services is a treaty right, and the federal government has a responsibility to provide health care to Indians.

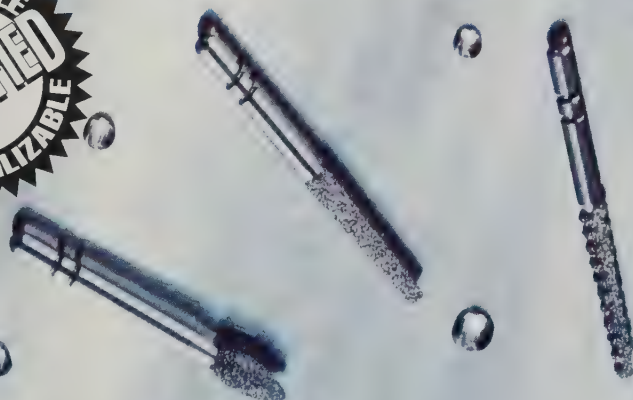
Although no written mention of health services appears in any of the treaties other than Treaty No. 6, the Indian people claim that health services were similarly negotiated in the discus-

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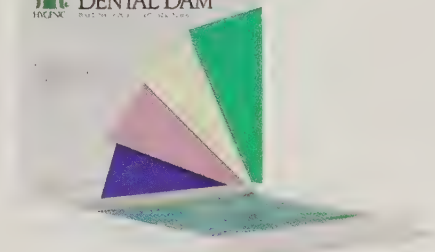


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¹Lareto, JI. Pros. Dent., 16:758-765, 1966.

²Cochran, Miller, Sheldrake, J. Amer Dent. Assn., 119:141-144, 1989.

sions leading up to other treaties. From their perspective, the federal government pledged its word, even though there is no written record that this occurred. The Indian position is that:

1. The federal government is responsible for Indian Health services, with "responsibility" defined in the strongest possible terms.
2. Indian people wish to deal with one government in negotiating health services – the federal government.
3. Indian people regard Treaty No. 6 and the other treaties that followed as fundamental and binding.
4. Indian people consider the federal government's failure to recognize the full meaning and scope of the treaties, together with its unwillingness or inability to resolve jurisdictional disputes with the provinces, as instrumental in the failure to improve Indian health status to an acceptable level.

The Federal Health Delivery System

The National Health and Welfare Act was passed in 1944. The next year, Indian Health Services was finally severed from the Indian Affairs Branch and transferred to the reorganized federal Health Department.

Indian Health Services was administered by one of several directorates in the Health Department through a network of regions and zones. There were initially five regions: Eastern, Central, Saskatchewan, Foothills, and Pacific. During the 1950s, the number of field facilities grew rapidly, and by 1960 there were 22 hospitals with a total of 2,172 beds, as well as 30 clinics, 37 nursing stations, and 83 health centres. Over \$23 million, or about 10 per cent of the total Health and Welfare departmental budget, was spent on these services.

A major reorganization of the Health Department took place in 1962. Indian Health Services was discontinued as a separate administrative entity, and a new branch called Medical Services was created by amalgamating seven former independent field services: Civil Aviation, Civil Service Health, Indian Health, Northern Health, Quarantine, Immigration, and Sick Mariner services. This new directorate was given the task of providing direct services to various categories of Canadians whose health

care fell outside provincial jurisdiction. The Indian health program remained a major activity within Medical Services, and the region and zone structure was maintained and applied to the entire Medical Services spectrum of activities.

In the century since the "medicine chest" was first mentioned in Treaty No. 6, health services for Indians had developed into a vast network of facilities and personnel, offering a wide array of programs. While the role of the federal government appeared to have peaked, the debate about who should be responsible for health care services for Indian people, and how these services should be delivered, has never ended.

Dental Services

No official policy exists to describe the responsibilities of the Medical Services Branch (MSB) in the area of native dental care. As a result, the dental program has been allowed to evolve as needs arose, and to respond to client demands as well as departmental fiscal restraints.

As little as 20 years ago, there were virtually no formal dental delivery services in place in remote locations. It was not uncommon for nurses, and sometimes priests, to extract teeth. Children were often flown into larger centres such as Frobisher Bay (now Iqaluit), where they would be given a general anesthetic, have their decayed teeth extracted and their mouths packed with gauze, and be sent back home.

There was little or no equipment available to provide restorative care in remote communities, and government salaries were too low to attract good personnel. As well, dentists were far too busy in their private practices to have any interest in providing more than emergency care to Indian patients, particularly since the approval and payment systems operated by MSB were very slow and cumbersome.

To respond to some of these shortcomings, Health and Welfare Medical Services Branch contracted with the University of Toronto in 1971 to develop and operate what is now called The National School of Dental Therapy (NSDT).

The school's dental therapy program embraces a teaching component and a service component designed to meet the dental needs of Medical Services Branch. In addition to its training responsibilities, the school is responsible for:

1. Standardization of procedures, equipment and techniques.
2. Quality control with regard to the work performance of graduates.
3. Placement, orientation and refresher courses for graduates.

As the dental therapy program grew and expanded to provide consistent levels of care in remote locations, the dental situation for private practitioners was also changing. The profession began to experience a surplus of dentists, and many dentists found that they were becoming less busy. As a result, the dental community became more interested in treating native people.

This new-found interest put a great deal of pressure on the existing, and somewhat antiquated, manual processing system used to handle prior approvals for treatment and payment for services rendered. As a result, MSB dental officers became mired in volumes of paper.

In 1979, a slow, painful process was begun to develop a schedule of dental services that would be acceptable to MSB management and the basis for a National Dental Claims Processing System (DCPS). This became a reality in 1987.

Unfortunately, the new system still demanded a great deal of prior approval for care, which, combined with a less-than-acceptable client identification system, created an even greater paper load for regional dental officers (RDOs) and their staff. Obviously, if MSB was ever to ease the administrative load of its RDOs, and provide time to begin good preventive programming, it would have to reduce the requirement for prior approvals. This proved to be easy, as prior approval was generally not necessary. In actual fact, cases were seldom turned down except for financial reasons.

A revised schedule of dental services was developed in cooperation with the Canadian Dental Association, with a view to minimizing the requirement for prior approval. As part of this process, consideration was given to removing prior approval requirements for all services that:

1. RDOs could not reasonably refuse without personally examining the patient.
2. An individual who was maintaining reasonable oral hygiene could reasonably be expected to require.

Reducing the requirement for prior

approvals and relieving RDOs of the responsibility for verifying patient status would, MSB believed, give the branch's field staff more time to develop good preventive care programs. This approach was seen as the best way for MSB to bring about improved oral health in the native population, but it would require the branch to reach people on reserves or in schools.

Today, the new system is refined to the point where dental care is being made available on a regular basis to most native people who want it. Even the most remote settlements are now visited by dental care teams for varying periods of time.

The Dental Therapy Program

In the summer of 1972, the Department of National Health and Welfare embarked on a new participatory concept for dental care in Canada's Northern communities. This involved training residents of the Northwest and Yukon territories as dental therapists, who would then be capable of meeting the primary dental care needs (fillings, extractions, and preventive services) of Canadians living in the Arctic and Subarctic.

The concept embraced two essential components: developing a school and a two-year dental therapy program; and ensuring that the quality and delivery of dental care remained in the control of certified graduates in the field. Three primary objectives were established for the program:

1. To train residents of Canada's north to administer high quality primary dental care under the supervision of a dentist.
2. To make dental care available to everyone, particularly inhabitants of small settlements, by establishing dental clinics manned by a resident dental therapist.
3. To establish a program of dental health education and preventive dentistry in each community.

To accomplish these objectives, three basic principles were formulated:

1. Equipment and procedures throughout the service would have to be standardized.
2. The quality of the work provided by the therapists and supervising dentists in the field would have to be controlled and monitored.
3. The clinics established under the program would have to be portable.

The dental therapist concept adopted by Medical Services Branch owes its strength to standardization and its focus on simplicity and consistency. Uniformity is established during training. It is maintained after graduation through a mechanism of regular field evaluations and consultations by NSDT staff.

Recently, the dental therapist concept has caught the attention of several developing nations. These countries tend to have very limited resources, and view the concept as an ideal solution to many of their dental needs.

As a result, NSDT has incorporated an international component. This has resulted in training opportunities being made available to students from countries such as Cameroon, Zimbabwe, Zaire, Nepal, Dominica, Grenada, Anguilla, Jamaica, and the Philippines.

Since its inception in 1972, the school has graduated 116 non-native students and 63 Indian, Inuit and/or Metis students, for a total of 179. The school has also graduated nine foreign students and others are still in training. In addition, from 1985 to 1988, a special one-year training program was conducted for 17 Mozambicans.

Status of Current Dental Care Program

a) Strengths

The present dental care system provides prompt service to those MSB clients who can access private practitioners, as well as to those in remote or isolated areas, where treatment is provided by resident dental therapists.

Blue Cross is providing efficient payment mechanisms (by mail or direct bank deposit) to private practitioner providers, who highly appreciate this service.

Equally important, for the first time in MSB history, the national claims processing system is capturing national data as well as individual client histories and provider profiles.

b) Weaknesses

Unfortunately, the program still lacks total standardization, and it will continue to do so until all prior approval requirements are eliminated as individual dental officers view treatment requests and special circumstances differently.

In addition, the program lacks an effective denture delivery system in remote areas, as witnessed by the 55 per cent denture failure rate reported in two separate studies in the Northwest Territories.

There is presently no preventive programming thrust, except for the oral health education provided by the dental therapists themselves. Furthermore, the dental program lacks the support of regional senior managers. This was borne out recently by the decision to delete dental person years in several regions, and restrict the number of dental therapist positions.

Finance and Administration

There are approximately 450,000 Indian and Inuit people in Canada who are deemed eligible to receive services under the Non-Insured Health Benefits Program. These benefits include drugs, eye glasses, prosthetic appliances, dental care and transportation services.

The cost of providing dental services to Canada's native people is in excess of \$60 million per year, with the bulk of this money going to private practice dentists. These dentists are paid through a computerized National Dental Claims Processing System operated for Medical Services Branch by Blue Cross of Canada.

Yearly negotiations between MSB's regional offices and Canada's provincial dental associations establish appropriate fee schedules for the services provided to native patients. These negotiated or established rates, usually a percentage of each provincial dental association's fee schedule, are provided to Blue Cross to be used for automatic cheque processing.

Nationally, CDA was involved in the development and revision of the Schedule of Dental Services for native people. The community dentistry section at the University of Toronto, along with the National School of Dental Therapy, played a key role in a recent survey to assess the dental needs of native people, as well as in expanding the Management Information System (MIS) for dental therapists. They were also involved in a joint project with the Commonwealth of Dominica in the Caribbean to train dental therapists, and to reinforce and upgrade the dental therapist program.

Involvement of Native People

In some parts of the north, local people are frequently employed by visiting dental staff. This has proven to be advantageous, given that these individuals, when trained, can act as dental assistants and, importantly, as interpreters.

Some locally-trained people have developed a keen interest in dentistry. A

few have subsequently been encouraged to pursue formal training at NSDT and have graduated as dental therapists. Some of these graduates have continued their academic careers, and have graduated as dentists via an access program at the University of Manitoba. The access program upgrades the students' knowledge of basic sciences to facilitate their entrance into the dental faculty. Given their experience and skill in dental therapy, dental hygiene is also a viable option for NSDT graduates, and this is being explored in some parts of the country.

All of the MSB dental therapists, many of whom are Canadian Indians, participated in the data collections process for the recently completed survey of Indian and Inuit dental needs.

The federal government is committed to transferring control of Northern health services to Indian and Inuit organizations, as well as to the governments of the Northwest and Yukon territories. Several transfers have already taken place, although only a few of these have included dental services. One of the earliest such transfers took place in 1976, when the Manitoba-based Swampy Cree Tribal Council took over control of their band's dental program. The program has had some difficult periods since then, but it has survived. Current plans call for the program to be expanded by using dental therapists to service six communities under the council's jurisdiction.

The Future

As in all other sectors, the dental program will have to make do with fewer resources for the foreseeable future. Spending and staffing cutbacks could adversely affect the program. It will therefore become increasingly important to involve native leaders in the decision-making process, as they can best assess the type of service and de-

livery modes needed to meet the oral health needs of their communities.

Significant improvement in the oral health status of MSB clients can only be brought about through effective dental preventive programs. These programs have already resulted in a dramatic reduction in dental caries among the general Canadian population. To accomplish similar results in the Indian and Inuit population will require a greater commitment on the part of Medical Services Branch.

There is no doubt that dentistry has the knowledge and materials to vastly reduce or even eliminate dental decay. New and more effective products to prevent both dental caries and periodontal disease are constantly coming on the market. And dental therapists are now trained and working in remote and underserved small communities, on a full-time basis, as additional members of the dental health teams.

The MSB dental program has now been refined to the point where it should be able to begin programs that will result in significant improvement in the oral health of Canada's Indian and Inuit people. ■

Bibliography

1. Policy of the Federal Government Concerning Indian Health Services, Ottawa, Health and Welfare Canada, 1974.
2. Indian Health Policy, Ottawa, Health and Welfare Canada, 1979.
3. Indian Health Discussion Paper, Ottawa, Health and Welfare Canada, 1980.
4. Evaluation of Indian Health Services, Ottawa, Health and Welfare Canada, 1990.
5. Young, T.K. *Health Care and Cultural Change*, Toronto, University of Toronto Press, 1988.
6. Gershman, D.M. *Northern Dental Program - Manitoba Region and Northwest Territories*, Winnipeg, University of Manitoba Press, 1983.
7. Davey, K.W. Dental Therapists in the Canadian North. *J Canad Dent Assoc* 40:287-291, 1974.



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Summary of prescribing information

THERAPEUTIC CLASSIFICATION
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Animal studies using the parenteral route have shown that "Tantum" Oral Rinse possesses properties of an analgesic—anti-inflammatory agent. This effect is not mediated through the pituitary-adrenal axis. Studies using the topical route have demonstrated the local anesthetic properties of benzidine hydrochloride. In controlled studies in humans with oropharyngeal mucositis due to radiation therapy, "Tantum" Oral Rinse provides relief through reduction of pain and edema. Similar studies in patients with acute sore throat demonstrated relief from pain.

Indications

"Tantum" Oral Rinse is indicated for relief of pain in acute sore throat and for the symptomatic relief of oro-pharyngeal mucositis caused by radiation therapy.

Contraindications

"Tantum" Oral Rinse is contraindicated in subjects with a history of hypersensitivity to any of its components.

Precautions

The use of undiluted "Tantum" Oral Rinse may produce local irritation manifested by burning sensation in patients with mucosal defects. If necessary, it may be diluted (1:1) with lukewarm water. Since "Tantum" Oral Rinse is absorbed from the oral mucosa and excreted mostly unchanged in the urine, a possibility of its systemic action has to be considered in patients with renal impairment.

Use In Pregnancy

The safety of benzidine HCl has not been established in pregnant patients. Risk to benefit ratio should be established if "Tantum" is to be used in these patients.

Use in Children

Safety and dose directions have not been established for children five years of age and younger.

Adverse Reactions

The most frequent adverse reactions reported are: local numbness (9.7%), local burning or stinging sensation (8.2%), nausea and/or vomiting (2.1%). The least frequent were reports of throat irritation, cough, dryness of the mouth associated with thirst, drowsiness and headache.

Treatment of Overdosage

There are no known cases of overdosage with benzidine HCl gargle. Since no specific antidote for benzidine is available, cases of excessive ingestion of the liquid should receive supportive symptomatic treatment aimed at rapid elimination of the drug.

Dosage and Administration

Acute sore throat: Gargle with 15 mL every 1 1/2 to 3 hours keeping in contact with the inflamed mucosa for at least 30 seconds. Expel from the mouth after use.

Radiation Mucositis: Use 15 mL as a gargle or rinse repeated 3-4 times a day, keeping in contact with the inflamed mucosa for at least 30 seconds and then expel from the mouth. Begin "Tantum" Oral Rinse the day prior to initial radiation therapy; continue daily during the treatment and after cessation of radiation until the desired improvement is obtained.

Availability

Tantum Oral Rinse is available in 100 and 250 mL bottles. "Tantum" Oral Rinse is a clear yellow-green liquid containing 0.15% benzidine hydrochloride in a pleasant-tasting aqueous vehicle with 10% ethanol.

Product monograph is available on request.

References:

1. Simard-Savoie S and Forest D. *Curr Ther Res* 1978; 23(6):734-45.
2. Whiteside MW. *Curr Med Res Opin* 1982;8:188-9.
3. Wethington JF. *Clin Ther* 1985;7(5):641-6.
4. Product monograph.
5. Yankell SL. Evaluation of benzidine HCl in patients with aphthous ulcers. *The Compendium of Continuing Education* 1981; 11(1).
6. Epstein JB. *Int J Radiation Oncology Biol Phys* 1989; 16(6):1571-5.

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Specialty Feature

Tales of Northern Dentistry

Olva Odum, BDS, M.Sc.

Talk to any practitioner who has worked in the Canadian North – even if it was only for a week or two – and you're sure to be given an account of what, in the telling, has become a real life adventure.

My own story of Northern dentistry began more than 20 years ago, when a small group of us set off in a seemingly very old and flimsy plane to the then far off community of Norway House. To say that we were nervous would be an understatement. Not only had we placed our well-being in the hands of a pilot who looked like a rundown rodeo cowboy, we were also headed to a native community that we knew very little about.

The 500-mile-long trip over Lake Winnipeg, flying at treetop level, soon made it apparent that civilization as we knew it was being left far behind. We were entering a different world, and we didn't have any idea what we'd find when we got there.

While the fly-in dentist continues to be the main source of dental care for many Northern communities, much has changed over the years. Gone, for example, are the days when 12-year-old children would walk miles to attend sporadically-offered dental clinics, where the usual treatment was to extract the patient's anterior teeth and replace them with immediate partial dentures.

Today, most Northern dental care is provided in modern nursing stations, which are serviced by scheduled airlines. In addition, community-based dental therapists have become more common, and are making a large contribution to the dental health of the Northern school-age population.

Despite these advances, fly-in clinics to remote Northern communities are still fairly common, and can still be an adventure. For example, dental teams have been known to arrive in a community two full days ahead of their equipment and supplies. Imagine what it would be like to arrive at your office to discover that you had no amalgam and a full appointment book.

In the North, obviously, it pays to



Going to the office – northern style.

have a plan B. In this case, plan B is to review the patients' charts, determine their likely treatment needs, and then rearrange the appointment book so that you can accommodate as many patients as possible once your supplies and equipment turn up.

Fortunately, most Northern communities have a local radio station. As part of plan B, the dental team can broadcast an announcement to the effect that, for the first few days at least, the clinic will only be available for toothaches (usually extractions), dentures, and examining babies with black teeth. Meanwhile, frantic phone calls to the airline will usually track down the missing items, and they eventually arrive in a day or two.

One of Canada's most serious and costly health problems is that of bottle caries in preschool native children. Unfortunately, because the causes of this condition are so complex and so closely linked to traditional child rearing practices, the change to Southern foods, deceitful advertising and a lack of understanding, there is no simple solution.

It is now estimated that 90 per cent of the babies in some villages in the Northwest Territories will develop an obvious extreme form of bottle caries. Management of bottle caries for the very young can be provided locally by a dentist. The child, usually under age two, is sedated, wrapped very tightly in a sheet

and the four upper anterior teeth are extracted.

Older children who require more complex treatment are generally flown to a regional centre, accompanied by a parent. Under general anesthetic, their posterior teeth are capped with stainless steel crowns and, again, their upper anteriors are extracted. Despite providing immediate relief from pain and release from frequent antibiotic use, etc., these radical treatments have longer-term consequences. The immediate effect is a loss of biting ability, which is a serious problem for people who are part of a hunting culture and used to eating wild meat. This impediment leads to food substitutions – usually soft, sweet foods – and hence, more decay. The long-term effect is very early eruption of the incisors, leading to full-scale orthodontic problems in the teenage population.

Northern dentistry, with its mix of flying and unorthodox treatment plans, appeals to people who enjoy a less conventional lifestyle. As the course coordinator for the University of Manitoba's northern externship program, however, I have learned that even the most urbanized students, people who normally would not be expected to succeed in the North, can gain great satisfaction from working in Northern communities. This is borne out by the high numbers of these individuals who choose to pursue



Arriving for the preventive dentistry program.

Northern dentistry on graduation.

The diversity of the North's people, the land and its changing seasons, are amazing and certainly contribute to the appeal of the work. And it's a land that moves to its own rhythms. In the far North, summer comes very late. Before the great thaw begins, the dental team will lose half their patients. The interpreter will then ask if she can leave, too. Dejected, the dentist may amble off to the nursing station kitchen for the comfort of a cup of coffee. There, he or she will probably see the janitor zipping up his parka and wishing everyone good-bye. What madness has encompassed this village?

Finally the old housekeeper gives the dentist a knowing look and whispers, "the birds have come." After eight months of winter, the arrival of the migrating birds heralds the first movement back to the land. And for Northerners, the great excitement of being back on the land, shooting geese and collecting eggs from cliff-edge nests can equal that generated by any Grey Cup-type event in the South.

For those of us who work in the North during the summer, it's not so much a question of locating patients and staff, but one of knowing when to work. Until you've experienced life with no light cues, you don't realize how disorienting perpetual daylight can be. The after dinner walk in bright sunlight can make you feel as if you'd skipped an afternoon clinic.

Winter clinics in the Arctic take on another pace, however. The shorter days and the need to be indoors makes for much more socializing. People have more time to listen to your instructions,



The author trying out a snow house.

and entire families will drop in, en masse, to learn about their dental problems. During these clinics, dental staff may also have to accommodate an audience of children, and provide them with a play-by-play commentary on the procedures being performed. This could actually be an audition, where the children check to see if the dentist would be suitable to visit grandma for a consultation. The challenges of Northern dentistry – fixing a broken handpiece, re-setting a try-in or praying that your local anesthetic doesn't freeze – fade when you realize what an amazing adventure you've had. At conferences, when we talk about our work, we refer to our slide shows and films disparagingly as National Geographic specials. But perhaps that's more or less what they are – Northern Geographic specials.

The pioneer days in the North are ending, but due to the small size of so many communities – 300, 500, even 1,000 people – it is unlikely that Northern dentistry will soon take on the shape

seen in the typical Canadian private practice. Self government for the First Nations' people may bring with it the demand for a greater convergence of health care standards, but the North demands its own solutions. Dentists and other health care workers will still have to deal with the great distances that must be covered to provide treatment services to far-flung communities, the isolation of practitioners and the unique dental needs of the Northern people.

The North is a land where dentists must not only perform good clinical dentistry, but also share their learning. In this way, they will help to reduce the disparity in dental health standards between the North and South.

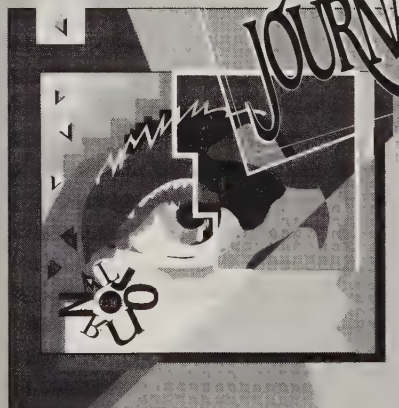
Despite all the advances, dentists in the North must still be able to accept missing a flight for two days because of bad weather. They must also be willing to perform above and beyond the call of duty by, say, helping the local nurse treat an accident victim, or repairing a favorite partial for the fifth time.

But those who choose to work in the North will also know its rewards: sighting the caribou herd, pulling in a seal for the beach feast or being part of the nursing station Halloween party. In other words, for the right person, every day spent in the North is a great adventure.

Dr. Olva Odium has worked in Northern Canada as a private practitioner, and for the last 16 years has been the course coordinator of the Northern externship undergraduate program at the faculty of dentistry, University of Manitoba.

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Specialty Feature

Baffin Island – It's Worth a Visit

P. Ralph Crawford, BA, DMD



January - Pangnirtung, Baffin Island (Photo: P.R. Crawford)

When Canadians think of Baffin Island – Canada's largest island and the world's fifth largest – most conjure up images of bitter cold, isolation and primitive living conditions. But to Ottawa dentist Dr. Ellwood Mitchell and his wife Vivi-Ann, Baffin Island means warmth, a sense of purpose, and adventure.

For the Mitchells, the Island's warmth comes from its Inuit inhabitants – who are kind, generous and trusting people – while the sense of purpose comes from delivering dental care that is much appreciated. The adventure, an added bonus to someone who loves the great outdoors, comes from living in the North.

Dr. Mitchell, a 1958 graduate of the University of Toronto, practised dentistry in downtown Ottawa until 1991, when he took a one-year sabbatical to fulfil a 30-year-old dream – to practise his profession somewhere in Canada's remote territories.

The dream must have been worth the wait. At the end of his first year in the North, Dr. Mitchell sold his big-city practice. Although he's "retired," he

now spends more time on Baffin Island than at his home in Ottawa.

For three months each winter, Dr. Mitchell is in Pangnirtung, a community of 1,050 people just south of the Arctic

Circle. He spends three of the four fall months, and one in the spring, in Igloolik, an island hamlet of 950 off the Melville Peninsula near the 70th parallel.

The 10,000 residents of Baffin Island are part of the larger community of Inuit people who recently negotiated land and self-government agreements to establish the territory of Nunavut. To be formed by dividing the Northwest Territories in two, Nunavut will cover nearly one quarter of Canada's total land mass.

Today, the Inuit are a people in transition. Although many are skilled in the traditional ways, as hunters and gatherers, others are involved in the wage economy and the technical infrastructure of their communities.

In Baffin Island, medical services are provided by nurse practitioners at modern health centres. Dental clinics, complete with modern – if somewhat basic – equipment form part of the health centre network.

Dental treatment consists of the normal dental office routine, i.e. preventive, restorative, periodontal, endodon-



National School of Dental Therapy Field Clinic, Igloolik, Baffin Island. (Photo by Darryl Gershman)



ALICE KHIEU

Dr Alice Khieu. Jeune diplômée de l'Université de Montréal, en chirurgie dentaire. Cliente de la Banque de Montréal depuis la fin de ses études en 1990, elle a d'abord obtenu un prêt pour l'achat d'une propriété, puis pour l'achat de sa clinique en 1991.

« Après mes études, j'ai été heureuse de trouver à la Banque de Montréal toute l'écoute et l'appui nécessaires pour lancer ma propre affaire. Ma clinique dentaire est une très petite entreprise avec trois employés et toute une clientèle à développer. J'ai dû rapidement établir une relation de confiance avec mes clients. La même relation s'est installée avec la Banque. Quand j'ai eu besoin d'un prêt commercial afin de moderniser ma clinique, on me l'a accordé. »

La Banque de Montréal sait entre autres reconnaître le talent de gestionnaire de jeunes entrepreneurs; elle n'hésite donc pas à leur accorder rapidement son appui. Elle l'a fait par le passé et le fera davantage en offrant à la plupart d'entre eux le programme Barème-PME qui leur permet d'épargner 1 % d'intérêt sur les prêts à taux variable.

Pour en savoir davantage sur la vaste gamme de produits offerts aux PME, appelez Mario Lamarche au (514) 877-8228 ou venez nous rendre visite à la succursale la plus près de chez vous.

**Au-delà de l'argent,
il y a les gens.**



Banque de Montréal

tic, and surgical services, as well as removable prosthodontics. No fixed prosthodontics or orthodontics are available, however.

Some schools employ dental therapists to provide standardized preventive and restorative services for children. Dr. Mitchell reports maintaining a good rapport with the school therapists, who often refer their more difficult cases to him.

The caries rate is very high among many of Baffin Island's children, whose diet is often high in sugar and pre-prepared "southern" foods. "However, with more communities on fluoridated water, enhanced public service announcements on radio and TV, stressing healthier life styles, and the cooperation of the community health representatives, (Baffin Island) is seeing increased interest in good oral care – particularly among the young mothers," said Dr. Mitchell.

For the Mitchells, the Baffin Island experience is a "family affair." Vivi-

Ann, a registered nurse who worked for years as a dental assistant in the Mitchell's Ottawa practice, isn't ready to retire either. Along with a local interpreter/receptionist, she and her husband provide typical five-day-a-week dentistry to Island residents.

Life in Baffin Island has been good to the Mitchells. In both Pangnirtung and Iglooik, they live in modern accommodations and enjoy many of the amenities found in their Ottawa home. They welcome the opportunity to interact with the local people, and like to go hunting, fishing and camping. It's a learning experience, too, as many of the local residents are happy and proud to share their rich knowledge of traditional survival skills.

For those who are less fond of hunting and fishing, particularly the camera enthusiast, Baffin Island provides ample opportunities to venture into one of the most pristine natural environments in the world. It is the land of the seal, walrus, narwhal, polar bear and mag-

nificent bowhead whale.

Respect for the environment and ecosystem is learned easily – it's a natural by-product of "living on the land," as the locals say. A number of communities are located close to some of Canada's most remote, but beautiful, national parks. Camping and hiking are popular in the summer, as well as snowmobiling in the winter.

The rewards of living and working in the North have been worth all its hardships for Ellwood and Vivi-Ann Mitchell. They are valued and respected members of their community, and recognized as members of the Island's total health care team. They are awed and challenged by a land of beauty and adventure. And they invite others to enjoy the same stimulating and exciting experience.

For information on dental services on Baffin Island, write Dr. Joe Firak, Baffin Regional Health Services, Iqaluit Health Clinic, P.O. Bag 200, Iqaluit, Northwest Territories, X0A

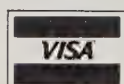


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CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	December 31, 1992	November 30, 1992
<i>Bond & Mortgage Fund</i>	100.67067	100.06827
<i>Common Stock Fund</i>	18.08007	17.62614
<i>Money Market Fund</i>	62.69306	61.82856
<i>Balanced Fund</i>	36.91339	36.50557

G.I.C. Fund Term	*Interest rates as at	
	December 31, 1992	November 30, 1992
1yr	6.60%	6.75%
2yr	6.85%	6.85%
3yr	7.35%	7.35%
4yr	7.35%	7.60%
5yr	7.85%	8.00%

*(*rates subject to change without notice.)*

Total Assets (market value) of the Plan as of		
	December 31, 1992	November 30, 1992
	167,846,021.97	\$166,649,185.30

For further information:

Write:



CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

416-296-9401
1-800-561-9401
Metro Toronto
Service in English
Extensions:
252, 253, 254
Service in French
Fax.

CDA Annual Dental Meeting • Toronto 1993

April 28 - May 1

PRE-REGISTRATION DEADLINE: MARCH 5, 1993

ANNUAL DENTAL MEETING UPDATE



It is with much enthusiasm and excitement that I invite you to participate in this year's CDA Annual Dental Meeting. As a member of the 1993 Convention Committee I can assure you that there are several sessions which will be of interest to dental hygienists and we have developed a superb social program that will provide you with a great opportunity to have fun while you learn!

In particular I would like to highlight a few of the scientific sessions that would be of particular interest to hygienists. The University of Toronto is offering a full-day Periodontal Symposium and Annette Linder will be delivering a session on Hygiene Department Development. In addition, a number of other clinicians will be delivering sessions of interest to hygienists.

This meeting promises to be one of the largest ever held in Canada and I urge you to plan to attend. In addition to an overwhelming scientific program including more than 60 clinicians presenting 1/2-day sessions, the mini-clinics program will feature more than 30 presentations and more than 30 table clinic presentations have been confirmed. An Exhibit Floor jam-packed with activity and more than 325 booths with representation from all the large dental suppliers is also a highlight of this meeting.

Need I say more? This is an event you cannot afford to miss. The registration fees have been reduced significantly this year and you are being given an excellent opportunity to network with other dental professionals and your colleagues in a stimulating and exciting environment. I look forward to welcoming you to Canada's largest metropolis this spring.

*Lorraine Boomhour,
CDHA/ODHA Representative
1993 Convention Committee*



It is my pleasure to extend a warm welcome to all members of the Dental Health Care Team.

The 1993 Convention Committee has been working diligently to provide a diversified scientific and social

program and I can say with confidence that we have achieved our goal.

This year several changes were made to welcome and accommodate the Canadian Dental Association and the Canadian Dental Assistant's Association. These changes, including the incorporation of a substantially reduced registration fee, were designed to encourage the participation of a record number of delegates and I hope you will take advantage of this opportunity.

Dental Assistants and administrative staff will be particularly interested to note that several sessions will address their needs specifically. The limited attendance session entitled "Enhancing the Career of Dental Reception" being held on Wednesday, April 28th, will undoubtedly appeal to many of you and offer you an excellent opportunity to further hone your office skills.

I hope you are planning to make history with us this year by participating in this meeting. The 1993 CDA Annual Dental Meeting will have the largest dental exhibition ever held in Canada in addition to a scientific program that features more than 60 clinicians lecturing on a wide variety of dental topics. Register today, the pre-registration deadline is March 5, 1993!

*Jeffrey Miller & Pat Sampson-Miller
ODNA/CDA Representatives
1993 CDA Convention Committee*

Let's Go Blue Jays – Let's Play Ball ...

While attending the 1993 CDA Annual Dental Meeting you may want to set aside some time to see the Blue Jays in action. We've just learned that there will be no less than **three** games scheduled during the CDA Annual Dental Meeting dates – and the convention will be taking place right next to SkyDome – so register for the Convention and plan to watch the Jays too ...

Blue Jays Schedule during CDA Annual Dental Meeting



Tuesday, April 27, 7:30 p.m.
Toronto Blue Jays vs. Texas Rangers
Wednesday, April 28, 7:35 p.m.
Toronto Blue Jays vs. Kansas City Royals
Thursday, April 29, 12:35 p.m.
Toronto Blue Jays vs. Kansas City Royals

Twelve lucky pre-registrants will be awarded exclusive seats to one of the Jays games in the **Bell Canada** skybox.

Compliments of Bell Canada

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Summary of Scientific Sessions

Active Learning - Active Living

	L'Hôtel				Metro Toronto Convention Centre			
	Ballroom A	Ballroom B	Ontario Rm.	Niagara Rm.	Rm. 201 A-D	Rm. 201 E-F	Rm. 202 A-B	Rm. 202 C-D
WEDNESDAY, APRIL 28	Practice Management BURTON PRESS	Restorative Dentistry TERRY DONOVAN	Skills for Reception JEFF MILLER CHARLOTTE PEER MILLER	Implants TORSTEN JEMT (Sponsored by Nobelpharma)				
	— LIMITED ATTENDANCE COURSES —							
A.M.	Endodontics STEPHEN BUCHANAN	Univ. of Western Ontario & The Cdn. Academy of Oral Medicine T. DALEY & G. MCCARTHY	Stress and Burnout CHRIS CHRISTIAN- SON (Sponsored by the ODA's Dentists at Risk Committee)	Implants Hands-on TORSTEN JEMT (Sponsored by Nobelpharma)	MINI CLINICS	Implant Maintenance / Periodontal Diagnostics SALME LAVIGNE	Anesthesia (local and electronic) STANLEY MALAMED (Sponsored by H-Wave)	GRIEVE MEMORIAL LECTURE Orthodontics EUGENE ROBERTS
THURSDAY, APRIL 29	↓	CFDE Lecture FIONA McCALL & PAUL HOWARD	↓		MINI CLINICS	↓	↓	Preventive Dentistry ERNEST NEWBRUN
P.M.								
A.M.	Practice Management ANITA JUPP	Endodontics (Lecture) DONALD YU (Sponsored by Kerr Canada)	Paediatric Dentistry PETER JUDD DOUGLAS JOHNSTON DAVID KENNY REBECCA YACOBI (Sponsored by Toronto's Hospital for Sick Children)	CDA RSP/CDIP C. GALLANT C. HARRIS J. LAMANTIA (Sponsored by CDSPI)	MINI CLINICS	Periodontal Diseases University of Toronto E. FREEMAN P. BIREK J. SODEK D. LEVY M. PHAROAH J. SYMINGTON P.A. WATSON	Infection Control MILTON SCHAEFER	Preventive Dentistry ERNEST NEWBRUN
FRIDAY, APRIL 30	↓	↓		Periodontics MARK SPATZNER (Lecture in French)	MINI CLINICS		↓	Nutrition BARBIE CASSELMAN
P.M.								
A.M.	Financial Planning THOMAS OLSON (Sponsored by Aurum Ceramic/Classic)	Periodontics RICHARD WILSON	SPOUSES' PROGRAM Street Smarts	Endodontics Hands-on DONALD YU (Sponsored by Kerr Canada) Limited to 30 participants				
SATURDAY, MAY 1	↓	↓		↓				
P.M.								

PRE-REGISTRATION DEADLINE: March 5, 1993

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Summary of Scientific Sessions

Active Learning - Active Living

Metro Toronto Convention Centre								
	Rm. 203 A-B	Rm. 203 C-D	Rm. 205 A-B	Rm. 205 C-D	Rm. 206 A-B	Rm. 206 C-D	Rm. 206 E-F	Auditorium
WEDNESDAY, APRIL 28								
A.M.	New Technologies MARILYN MILLER & THOMAS TRUHE	Prosthodontics CLAUDE LAMARCHE (1/2 day French 1/2 day English)	Paedodontics MARVIN BERMAN	Dental Materials ALAN BOGHOSIAN	Geriatric Dentistry LINDA C. NIESSEN	Restorative Dentistry KARL LEINFELDER (Sponsored by Wright Dental)	Fluorides CHRISTOPHER CLARK (Sponsored by Procter & Gamble)	Practice Management WALTER HAILEY (Sponsored by Healthco D.D.L.)
THURSDAY, APRIL 29	↓	↓	↓	↓	↓	↓	↓	
P.M.								
A.M.	Hygiene Department Development ANNETTE LINDER	Periodontics MARK SPATZNER (Lecture in English)	Ortho-Paedodontics DAVID KENNEDY	Dental Materials JAMES SANDRIK	Geriatric Dentistry RON ETTINGER	Aesthetics ROSS NASH (Sponsored by Caulk Canada)	Periodontics JACK CATON	Wealth Accumulation TED LeVALLIANT (Sponsored by LeValliant Associates)
FRIDAY, APRIL 30	↓	Computers JOHN DeVRIES et al (Sponsored by Exan)	↓	↓	↓	↓	↓	
P.M.								
A.M.	Team Concept LORNA AKERVALL	TMJ GILLES LAVIGNE (1/2 day French 1/2 day English)	Nutrition BARBIE CASSELMAN	Prosthodontics BRIEN LANG	MINI CLINICS	Oral Medicine STUART FISCHMAN	Orthodontics / Paedodontics JACK DALE (Sponsored by the Canadian Association of Paediatric Dentistry)	
SATURDAY, MAY 1	↓	↓		↓		↓	↓	
P.M.					MINI CLINICS			

PRE-REGISTRATION DEADLINE: March 5, 1993

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Limited Attendance Courses – Wednesday, April 28th

Wed., April 28



TERRY DONOVAN, D.D.S.
Los Angeles, California
**"Update on
Aesthetic Restorative Dentistry"**

The contemporary restorative dentist has a host of options with which to help his or her patients. Many of these options are considerably less invasive than many of our conventional restorative therapies. Many patients present for aesthetic restorative treatment, and are becoming increasingly sophisticated in their expectations of the final results. Additionally, manufacturers bring a myriad of new products to the market, often accompanied by a blizzard of information purported to demonstrate the benefits and efficacy of these new products.

This presentation will delineate the procedures essential for success with conventional and contemporary adhesive restorative dentistry. An objective comparative evaluation of many of the newer products on the market will also be given, with an emphasis placed on clinical manipulation of these products.

Wed., April 28



**JEFF MILLER &
CHARLOTTE
PEER MILLER**
London, Ontario

"Enhancing the Career of Dental Reception"

This course is part of the ODN & AA's Network for Career Enhancement program and was created specifically for career dental receptionists to recognize the vital role they play in the delivery of dental health care services.

Using adult education techniques, Jeff Miller and Charlotte Peer Miller will use facilitation techniques to build on prior learning. Together, the participants will share experiences, explore and develop new skills, knowledge and attitudes in their chosen vocation, dental reception. This program is designed specifically for continuing education and networking for Canada's dental receptionists.

Wed., April 28 and Thurs., April 29 (a.m. only)



TORSTEN JEMT, D.D.S., Ph.D.
Göteborg, Sweden
**"Recent prosthetic advances in
osseointegration ad modum
Branemark"**

HANDS-ON COURSE

For those not certified in the Branemark system, this is a certification course. This course is designed to give prosthodontists and general practitioners knowledge about the prosthetic procedures of the Branemark System.

Topics to be addressed will include:

- Introduction and review of clinical and physiological problems associated with edentulism and partial edentulism.
- Review of the scientific background of the Branemark system including biological considerations, biomechanical aspects and technical engineering aspects. Brief overview of surgical procedures and presentation of surgical aspects of significance for prosthetic rehabilitation.
- Prosthetic treatment planning, patient selection, indications and contraindications.

Wed., April 28



BURTON PRESS, D.D.S.
Alamo, California
"Secrets of Practice Success"

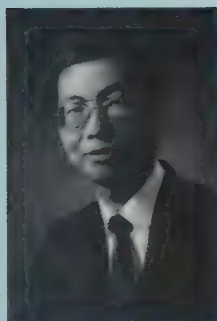
This presentation is a must for the entire team! Join Burt Press, dentistry's greatest motivator for a revealing look at what makes the winning practices tick. Decide today to take charge of your future – to experience the professional reward you deserve.

In today's competitive environment, the *new patient experience* is critical in gaining acceptance for total treatment. You'll learn the exact details, and why success is as simple as 1, 2, 3. Focus on a daily technique which increases gross 10% without additional patients. Critically evaluate the profitability of your approach to soft tissue management. You'll be challenged and entertained. You won't fall asleep. You may never be the same!

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Limited Attendance Courses – Saturday, May 1st

Sat., May 1



DONALD YU,
B.S., D.M.D., M.Sc.D.
Edmonton, Alberta

"Predictably Successful Endodontics in the '90s"

HANDS-ON COURSE

On Friday, April 30th there will be a two-part lecture series to complement this Hands-on Program. The lectures will be open to all delegates registered for the convention.

The high demand by an informed public for endodontic services demonstrates that general practitioners must be abreast of proven predictably successful endodontic techniques. The rationale and therapeutic end-point of endodontic therapy in relationship with clinical cases will be clarified in social, philosophical and biological viewpoints.

This hands-on presentation will enable participants to find, feel, clean and shape the root canal system using the passive envelope of motion of the files and reamers. Participants will experience the proficiency of hermetic obturating with warm gutta-percha in conjunction with sealer into all the portals of exit of the root canal system.

Topics will include:

- Hands-on Schilder's technique on mounted extracted anterior and posterior teeth
- Review of anterior tooth
 - access opening
 - cleaning & shaping
 - packing with warm gutta-percha
- Demonstration on anterior and posterior teeth
- Cases review & critique
- Questions & Answers

The following clinicians will be assisting Dr. Yu during the full-day hands-on program: Dr. Henry Yu, Dr. Jeffrey Grossman, Dr. Zareh Onzounian, Dr. Eric Kwan and Dr. Edwin Levy.

WIN A JEEP!



You could drive home from the 1993 CDA Annual Dental Meeting in a brand-new vehicle.

Aurum Ceramic/Classic, sponsor of the CDA Annual Dental Meeting has once again graciously provided the grand prize for Exhibit Hall attendants.

Each day you visit the 1993 Exhibit Hall, your chances of winning will increase.

ANNUAL FUN RUN

Saturday, May 1st • Run starts at 7:30 a.m.

Sponsored by Healthgroup Financial



Shuttle bus from l'Hôtel
departs at 6:45 a.m.

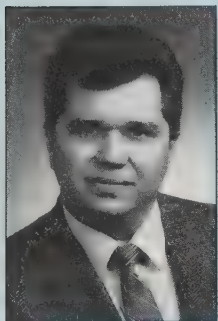
Trek the Martin Goodman Trail along the shoreline of Lake Ontario, passing by Ontario Place, on Toronto's scenic Harbourfront.

**Run for the FUN of it!
(Bring the entire family)**

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Highlights of the 1993 Annual Dental Meeting Program

Fri., April 30 – AM Session



TED LEVALLIANT
Ottawa, Ontario
**Wealth Accumulation
for Dentists**

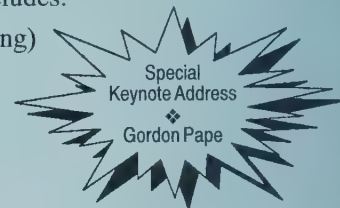
Lecture sponsored by **LeValliant Associates, Vista Financial, Arthur Andersen, Standard Life, Medi-Dent and Price Waterhouse**

All too often Canadian dentists fail to generate substantial wealth from their excellent revenue stream. They lack a coherent, comprehensive approach to tax and financial planning and to the long term objective of building wealth.

LeValliant Associates recognizes the challenge and has assembled a prestigious national team of experts to offer a co-ordinated approach to wealth accumulation for Canadian dentists.

The LeValliant Associates team includes:

- Vista Financial (financial planning)
- Arthur Andersen & Co. (tax)
- Standard Life (tax sheltering / IPP's)
- Medi-Dent (leasing)
- Price Waterhouse (IPP's / pensions)



At this comprehensive session, experts in these fields will join Ted LeValliant to provide information on co-ordinating an approach to wealth accumulation for Canadian dentists.

Dentists attending this session will be provided with complimentary meal passes which can be redeemed in the Exhibit Hall restaurant on Friday, April 30th.

Canadian Dental Association Symposium on Periodontal Diseases

The University of Toronto has graciously offered to sponsor a full-day of lectures on Friday, April 30th.

AM SESSION

New Diagnostic Methods for Periodontal Diseases
Moderator/Discussant: Eric Freeman



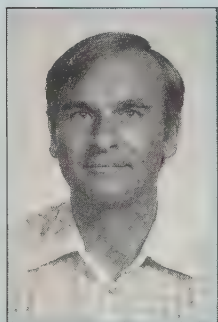
E. Freeman



P. Birek



D. Levy

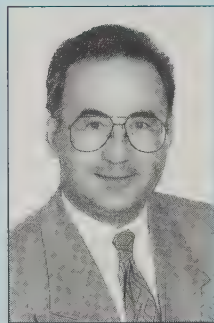


J. Sodek

First Speaker: E. Freeman
Overview – New Diagnostic Methods for Periodontal Diseases
Second Speaker: P. Birek
Approaches to Measure Periodontal Destruction and to Assess Risk
Third Speaker: J. Sodek
Crevice Fluid Enzymes as Diagnostic Tools
Fourth Speaker: D. Levy
Impact of Microbiological Tests on Treatment Decisions

PM SESSION

Dental Implantology – A Current View
Moderator/Discussant: P.A. Watson



M. Pharoah



L. Symington



P.A. Watson

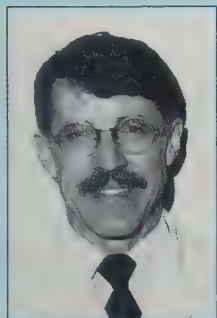
First Speaker: P. Birek
Establishing an Inhouse Implant Training Program
Second Speaker: M. Pharoah, DDS, MSc, FRCD (C)
The Applications of Diagnostic Imaging to Implant Procedures
Third Speaker: L. Symington, MSc, PhD
Implants, Success and Failure
Fourth Speaker: P.A. Watson, DDS, MSd
Clinical Trials with a New Implant Design

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Highlights of the 1993 Annual Dental Meeting Program

Thurs., April 29

This program is jointly sponsored by **The University of Western Ontario** and **The Canadian Academy of Oral Medicine**



TOM DALEY, DDS
London, Ontario

8:30 - 9:40 AM:

Asymptomatic Impacted Teeth – The Extraction Issue from the Standpoint of Cystic or Neoplastic Potential of the Impacted Follicle



GILLIAN M. MCCARTHY,
BDS, MSc.
London, Ontario

9:50 - 11:00 AM:

Current issues in HIV and Dentistry

Fri., April 30

Lecture sponsored by
The Hospital For Sick Children – Toronto



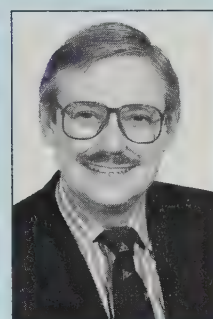
PETER JUDD,
DDS, MSc.
Toronto, Ontario



DOUGLAS JOHNSTON,
DDS
Toronto, Ontario



REBECCA YACOBI,
DDS, MSc.
Toronto, Ontario
DAVID KENNY,
DDS, PhD
Toronto, Ontario



AM Session: **Protocol-based Restorative and Pulp Treatment for the Primary Dentition**

PM Session: **Management of Children and their Parents in Emergent and Non-emergent Situations**

THE MURRAY McDONALD MEMORIAL LECTURE

Thursday, April 29th • 1:30 - 4 P.M.



The World is Our Challenge

Best-selling authors Fiona McCall and Paul Howard sailed 40,000 miles around the world in a 30-foot sailboat with their two young children.

Their five-year odyssey is an incredible mix of excitement, discovery and challenge, an adventurous modern-day Swiss Family Robinson story.

But more than that, their colourful and entertaining slide presentation underscores how dedicated planning and wilful determination can make a venture work, be it world-wide voyaging or a major life goal.

CDA Annual Dental Meeting • Toronto 1993 • Mini-clinics

Thursday, April 29

8:30 - 9:30

- 201 A **Electronic Dental Anaesthesia**
Mr. Chuck Hudson, 3M Canada
- 201B **The Sensory Innervation of the Teeth and the Injection Site Anatomy Associated with their Anaesthesia**
Dr. Larry Anderson
- 201C **Comfortable Retirement in 2010? Fact or Fiction for Today's Dental Community**
Mr. John Green
Ms. Gail Wiebe, Investors Group
- 201D **Impression Materials and Troubleshooting Problems**
Dr. James Hamilton
Kerr Canada

9:30 - 10:30

- 201A **Factors to Consider for a Predictable Post & Core Build-Up ... New Materials and Concepts**
Dr. Kieth Manning
- 201B **Diagnosis and Management of Endodontic Pain**
Dr. Eric Kwan
(* will run until 11:30 am)
- 201C **An Alternative Local Anaesthetic Technique**
Dr. Frank Dillon, Valudent
- 201D **Treatment of Thumbsucking in Primary & Mixed Dentition**
Dr. Jack Maltz

10:30 - 11:30

- 201A **Effectiveness in Communication**
Dr. John Bakti,
Centre for Self Development
- 201C **Tax Planning for the New Practitioner**
Mr. Mark Goodfield
Mr. Paul Girolametto,
Chartered Accountants
- 201D **Prospective Planning in Prosthodontics**
Dr. Bruce Glazer &
Gunnar Lindberg, RDT

13:30 - 15:00

- 201A **Trouble Shooting Implant Dentistry**
Dr. Izchak Barzilay

13:30 - 14:30

- 201B **Controlling Strep Mutans Infections with Chlorzoin**
Drs. J. Connelly, D. Krmec, and
J. Sandham, Healthco Canada Ltd.

13:30 - 14:30 (continued)

- 201C **Dental Volunteers for Israel**
Drs. Mel & Sharon Perlmutter
- 201D **Early Detection, Diagnosis and Management of Oral and Oropharyngeal Cancer**
Dr. Arthur Mashberg,
Germiphene

14:30 - 15:30

- 201C **Infection Control Review – The New RCDS Guidelines**
Dr. Lawrence Yanover
- 201D **The Institutionalized Senior**
Dr. Mary Kudrac

14:30 - 16:30

- 201B **Forensic Dentistry and Child Abuse**
Dr. Frank Stechey

15:00 - 16:30

- 201A **Advances in the Assessment and Control of Periodontal Diseases**
Ms. Marianne Clancy, RDH
Ms. Rebecca Van Horn, RDA,
Oral B Laboratories

15:30 - 16:30

- 201C **Selling My Practice**
Mr. Lee Maddison,
Mr. Ron MacKenzie, CA
Mr. David McPherson,
Mr. Harley Murphy
Medi-Dent Professional Services
- 201D **Fluorides and Oral Health: An Update**
Ms. Helen Grad, Pharmacist

Friday, April 30

8:30 - 9:30

- 201A **Making Patients Long Term Customers – Through Customer Service Quality**
Mr. Gordon Hanna,
Hanna Consulting Group
- 201B **The Fluoride Story**
Ms. Marianne Clancy, RDH,
Ms. Rebecca Van Horn, RDA,
Oral B Laboratories
- 201D **Surgical Considerations in Enhancing Prosthetic Maxillary Implant Esthetics**
Dr. Jack Zosky

9:30 - 10:30

- 201A **How Much is Your Practice Worth?**
Ms. Lane Brown Rourke,
Roi Corporation

9:30 - 10:30 (continued)

- 201B **Implants! The Good, The Bad, The Ugly!**
Drs. Jon Perlus & Peter Model
- 201D **Felxi-Anterior: Taking The Best from the Cast Post Technique and Improving Upon It**
Dr. Barry Lee Musikant

10:30 - 11:30

- 201A **Comprehensive Irrigation Therapy**
Ms. Cheryl Ivaniski,
Perio Powerdentics Consulting
- 201B **Preventive Maintenance Therapy – A Program for GP's**
Dr. Murray Arlin
- 201D **Dental Identification and its Application in Mass Disasters**
Drs. Ross Barlow & Stan Kogon

13:30 - 14:30

- 201A **Implant Treatment in General Practice and Porous Coated Implants**
Dr. Milan Somborac
- 201B **Vertical Extrusion: A Multi-disciplinary Approach to the Management of Crown-Root Fractures**
Major Neville Headley

13:30 - 15:00

- 201D **Contemporary Clinical Techniques for All Ceramic Restorations**
Dr. George Tysowsky,
Ivoclar North America

14:30 - 15:30

- 201A **Dental Transition – Moving In – Moving Out of Dentistry**
Mr. Tom Allen & Mr. Derek Hill,
Healthgroup Financial
- 201B **Excellence in Endodontics**
Drs. Gary Glassman &
Kenneth Serota

15:00 - 16:30

- 201D **IPS Empress: All Ceramic Crown System 2 Year Clinical & Technical Update**
Drs. Lee Culp & Gary Krueger,
Ivoclar North America

15:30 - 16:30

- 201A **Your Dental Chart is a Legal Document**
Mr. Jim Gommerman,
Safeguard Business Systems
- 201B **Dental Fluorosis – Disease or Adverse Effect?**
Dr. Jean-Guy Vallée

CDA Annual Dental Meeting • Toronto 1993 • Mini-clinics

Saturday, May 1

8:30 - 11:30

- 206A **Advanced Periodontal – Prosthodontics “Furcation Management”**
Drs. M. Budd & P. Novack

8:30 - 9:30

- 206B **Some New Thoughts on Functional Appliances**
Drs. Allen Feldman & Gerald Zeit

9:30 - 10:30

- 206B **Use of a Circumferential Band to Assist Periodontal Dressing Retention and Tissue Positioning on an Isolated Molar**
Major Neville Headley

10:30 - 11:30

- 206B **An Overview of Removable Partial Denture Concepts and Treatment Philosophies with the RPI (I-Bar) System**
Dr. Robert Baima

13:30 - 15:00

- 206B **Prosthodontic Considerations of Implants**
Dr. Kenneth S. Hebel

15:00 - 16:30

- 206B **Implantology: An Overview**
Dr. Kochman

CDA Annual Dental Meeting • Toronto 1993 • Table Clinics

Thursday, April 29 – PM

“Selective Polishing”

Ms. Denise Bard, Ms. Carmelina Buksa, Ms. Beverley Kassirer, Ms. Linda McKay (Dental Hygiene Students, U of T)

“Demonstration of Orthodontic and Orthopedic Appliances Used in Mandibular Advancement”

Mr. Dennis Walsh, R.D.T., My Dental Laboratory Ltd.

“Filling Portals of Exit of Root Canal System in Clinical Cases”

Dr. A. Tam, B.Sc., D.D.S.

“That Important First Appointment”

Dr. Jane Gillanders, Dr. Katherine Ing, Dr. Roxanna MacMillan, Dr. Eileen Lo, Dr. Michele Wang (U of T and Hospital for Sick Children Dental Interns)

“Nature Care”

Mrs. Julie Heidebrecht, Healthco

“Role of Chlorhexidine in Clinical Dentistry”

Mrs. Jeannie Boniface, B.A., Germiphene Corporation

“Infection Control Chemical Management”

Ms. Dianne Doner, Pascal International Corporation

“Environmentally Friendly Infection Control”

Mr. Dean Swift, B.Sc., B.Ed., Perobics Company

“Implant Supported Single Tooth Replacements”

Dr. Dan Indech, D.D.S., Dip. Perio

“Enhanced Aesthetics for Implant Dentistry”

Ms. Mirjana Salkovic, R.D.T., Pro-Mart Dental Lab

Friday, April 30 – AM

“Magical Stained Glass”

Dr. Morley Hardy, D.D.S.

“Handpiece Maintenance and Sterilization”

Mr. Jack Derhovagiman, Mr. Mel Gibbons, Canadian Dental Supply Ontario Ltd.

“Accurate Reproduction of Soft Tissue Contours for Crown and Bridge Fabrication”

Mr. Lee Culp, C.D.T., Mrs. Julie Healey, Ivoclar North America

“Controlling Strep-Mutans Infections with Chlorzoin Therapy”

Dr. John Connelly, D.D.S., Ms. Lucie Nadeau, B.Sc., Knowell Therapeutic Technologies, Inc.

“Long Term Stability of Cases Treated with Fixed and Removable Appliances”

Dr. G. Altuna, Dr. B. Freeman, Mr. Kevin Davis, University of Toronto, Faculty of Dentistry

“Diagnosis and Treatment of Dual Bites”

Dr. Bruce Freeman, D.D.S., Dr. Kathleen Russell, University of Toronto, Faculty of Dentistry

“Provisional Restorations for Implant Cases”

Mr. Wolf Riedel, Nobelpharma Canada Inc.

“A Comparison of Panoramic Radiographs in Pediatric vs. Adult Patients”

Dr. Robert Majewski, D.D.S., M.S., Dr. James Geist, D.D.S., M.S., University of Detroit, Mercy School of Dentistry

“Implant Angulation Correction and Aesthetics”

Mr. Steven Brook, B.Sc., M.B.A., Hu-Brook Health Care Products Inc.

“Oral Hygiene for the 90’s”

Dr. Michael Wiseman, D.D.S.

Friday, April 30 – PM

“Maximization of Orthodontic Treatment Efficiency with a Minimum of Risk”

Dr. Herbert Hanson, D.D.S., Dip. Ortho

“Computer Assisted Mass Disaster Identification – The DIP-2 System”

Dr. Ross Barlow, D.D.S., Dr. Stan Kogon, D.D.S., Ms. Liz Chin, University of Western Ontario, Faculty of Dentistry

“White Lesions of the Oral Cavity”

Dr. Susan Sutherland, D.D.S., Dr. Marco Fazari, D.D.S., Dr. Seema Sharma, D.D.S., Dr. Michelle Wong, D.D.S., Dr. Karen Burgess, D.D.S., Sunnybrook Health Sciences Centre

“IPS Empress Crowns”

Dr. Daniel Isakow, D.M.D.

“How to Imitate Nature in Restorative Dentistry”

Ms. Nicole Rotsaert, Mr. Henri Rotsaert, R.D.T., Rotsaert Dental Laboratory Ltd.

“Implants – What is Passive Fit? (Spark Erosion)”

Mr. Eric Rotsaert, Mr. Kevin McAuley, Rotsaert Dental Laboratory Ltd.

“Irrigation Therapy – How? When? Why?”

Ms. Cheryl Ivaniski, D.H.

“Methods, Procedures, and the Indications for Bleaching; (Vital, Non-Vital, and Micro-Abrasion)”

Dr. Maria Digregorio, D.D.S., Dr. Kevin Calzonetti, D.D.S., Dr. Brad Christiansen, D.D.S., Hamilton General Hospital and Academy of Dentistry Interns

“Osseointegrated Implant Surgery and Prosthetic Rehabilitation of Edentulous Patients”

Dr. Mark Kochman, D.D.S.

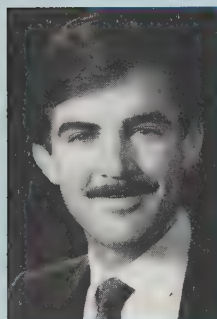
“Designing a Renovation and Expansion”

Mr. Grant Somerville, Grant Somerville Design Inc.

CDA Annual Dental Meeting • Toronto • Scientific Program

THURSDAY, APRIL 29TH

Sponsored by ODA's Dentists at Risk Committee



Stephen Buchanan
DDS, FICD

AM & PM: The Art of Endodontics: Concepts and Techniques for the '90s (Part I & II)



Chris Christianson
DMD

AM: Stress: It's Your Choice
PM: Burnout - A "Bottom-Line" Problem

Sponsored by Healthco D.D.L.



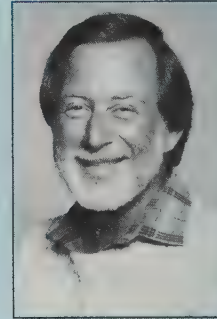
Walter Hailey, Jr.
AM & PM: The Missing Link in Dentistry (Part I & II)



Salme Lavigne
RDH, MS

AM: What Do You Do When Your Patient Has an Implant?
PM: Periodontal Diagnostics

Sponsored by H-Wave Canada



Stanley Malamed
DDS

AM: Electronic Dental Anesthesia
PM: Local Anesthesia Update



Alan Boghosian
DDS

AM & PM: Contemporary Dental Materials and Their Clinical Application (Part I & II)



Ernest Newbrun
DMD, PhD

PM: Changing Trends in the Use of Fluorides in the Home and in Clinical Practice



Marilyn Miller
DDS

AM: New Dental Technologies



Thomas Truhe
DDS

PM: The State of the Profession and Prevention Revisited



Claude Lamarche
DDS

AM: Key to Success with Complete Removable Prosthodontics

Grieve Memorial Lecture



Marvin Berman
DDS

AM: Reluctant Children and the Dental Team ... Let's Have a Party!
PM: Creative Paediatric Dentistry ... Marvin's Garden of Tricks



Eugene Roberts
DDS

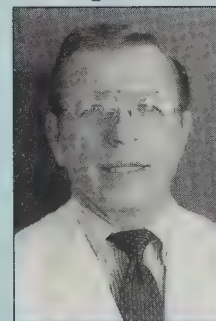
AM: Bone Physiology, Implants and Orthodontics



Linda Niessen
DMD, MPH

AM: Will You Still Need Me? Will You Still Treat Me - When I'm 64?
PM: Oral Health and Aging: Prevention isn't Just for Kids!

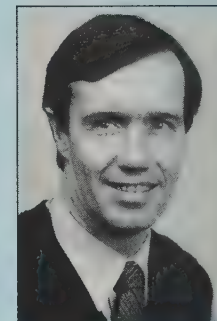
Sponsored by Wright Dental



Karl Leinfelder
DDS, MS

AM & PM: Current Developments in Restorative Materials and Techniques.

Sponsored by Procter & Gamble



Christopher Clark
DDS, MPH

AM: The Appropriate Use of Fluorides in the '90s
PM: Prevention of Oral Diseases in the 1990's

CDA Annual Dental Meeting • Toronto • Scientific Program

FRIDAY, APRIL 30TH



Anita Jupp

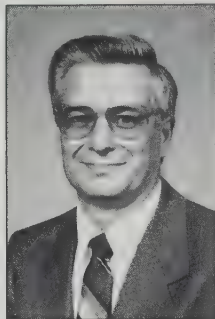
AM: Nuts and Bolts Management

PM: Attract and Retain Good Patients and Good Staff



Cyril Gallant
CLU

AM: CDIP & CDA RSP: The Dentists' Own Insurance and Retirement Choice



Clyde Harris
FLMI



Joanne Lamantia
BA

Sponsored by **CDSPI**

Sponsored by
Caulk Canada



Ross Nash
DDS

AM: Porcelain/Ceramic Bonded Restorations

PM: Composite Resin Update



Barbie Casselman
BAA, FncFS

PM: The Role of Nutrition in a Healthy Lifestyle – Practical Advice



Annette Linder
RDH, BS

AM: Creating the New Patient Recall

PM: Hygiene Department Development



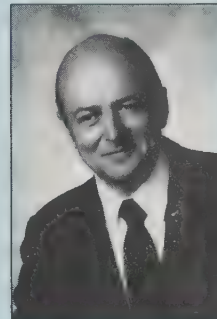
Mark Spatzner
DMD

PM: Regenerative Periodontics for the '90s



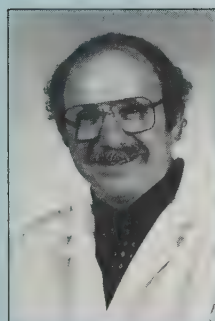
David Kennedy
MSD, FRCD

AM & PM: Early Orthodontic Treatment



James Sandrik
PhD

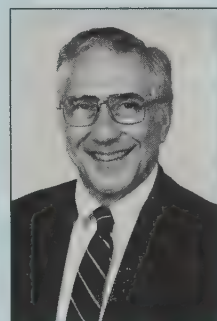
AM & PM: Applications and Review of Dental Materials



Ron Ettinger
MDS, BDS

AM: Assessment and Management of the Aging Patient

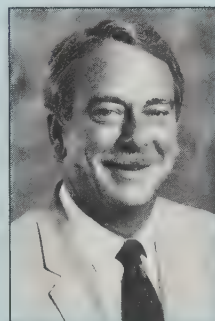
PM: Treatment of the Aging Patient in the Office and at Other Sites



Milton Schaefer
DDS, MLA

AM: Better Management of Infection Control

PM: AIDS, Herpes & Hepatitis: Know Your Enemies!



Jack Caton
DDS, MS

AM: Periodontal Regeneration of Hard and Soft Tissues

PM: New Concepts and Techniques of Periodontal Diagnosis

ALSO ON THURSDAY:

The Murray McDonald Memorial Lecture
University of Western Ontario

ALSO ON FRIDAY:

Hospital for Sick Children

University of Toronto –

Symposium on Periodontal Diseases

Ted LeValliant

Ernest Newbrun –

PM: Diagnosis and Management of the Caries Risk Status of Patients

John DeVries, et al –

PM: Computers

(Sponsored by Exan)

CDA Annual Dental Meeting • Toronto • Scientific Program

SATURDAY, MAY 1ST

Sponsored by **Aurum**
Ceramic/Classic



Thomas H. Olson
AM: Current Tax Planning for Dentists
PM: Focus on Tax Planning for the Future

Sponsored by the **Cdn. Assoc.**
of Paediatric Dentistry



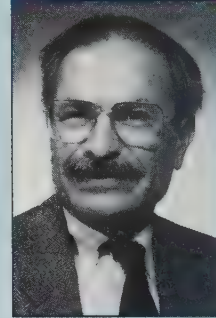
Jack Dale
DDS, FRCD (C)
AM: Serial Extraction ...
A Misconception
PM: Serial Extraction ...
A Bum Rap!



Brien Lang
DDS, MS
AM: Lingualized Integration: An Occlusal Scheme for Edentulous Implant Patients
PM: Prosthodontic Management of the Difficult Denture Patient



Lorna Akervall
CDA, PDA
AM & PM: Hands Off Dentistry – Team Building for the '90s and Beyond



Stuart Fischman
DMD
AM: Infection and the Oral Cavity: Herpes, Hepatitis and AIDS
PM: Cankers, Chancres, Cancer – Update on Oral Ulcers



Gilles Lavigne
DMD, MSc
PM: Bruxism and Myofascial Pain: Where Are We in 1993?



Richard Wilson
DDS
AM: Predictable Success in Restorative Dentistry

PM: The General Dentist & the Periodontist: How to Find Satisfaction, Quality & Financial Success in Mutual Practice Building

ALSO ON SATURDAY:

Barbie Casselman

AM: Feeling Good All the Time –
A Healthy Approach to Weight Control

The 1993 Canadian Dental Association's EXHIBIT HALL will be the largest dental exhibition ever held in Canada featuring all the large dental suppliers.

**Next month's CDA Journal will have a complete listing of participating exhibitors –
WATCH FOR IT!**

Toronto 1993 • April 28 – May 1

Preliminary Agenda • 1993 Spouses' Program

Thursday, April 29th

- Visit to the Royal Ontario Museum (ROM)
- Visit to Toronto's Harbourfront
- Lunch at the Harbour Castle Westin
- Luncheon Speaker – featuring Robin Armstrong, a local astrologer
- DIAC Tour of the 1993 Convention Exhibit Hall
- Opening Ceremony

Friday, April 30th

- Walking tour of the SkyDome
- Lunch at the Windows Restaurant – SkyDome Hotel
- Fashion Show by Toronto designer/couturier Heather Andersen

Friday, April 30th (continued)

- Tour of the CN Tower

Saturday, May 1st

- "Street Smarts"
Lecture to be presented by the Metro Toronto Police – open to all delegates

Delegates may register for either one or both days. Registration to the convention, as a spouse or accompanying person is \$50.00. This provides the registrant with access to the Scientific Sessions on Thursday, Friday and Saturday and the Exhibit Hall. To participate in the tours and luncheons you must register for the Thursday package and/or the Friday package at a cost of \$60.00 for each day.

A TON OF FUN!

The 1993

Children's Program (for children 6 and over)

PRELIMINARY AGENDA

Thursday, April 29th

A full-day visit to the Metro Toronto Zoo including rides on the Monorail and a guided tour.

Lunch at McDonald's

Friday, April 30th

A full-day visit to the Royal Ontario Museum including a tour of the museum and the planetarium.

Lunch at the Museum.

Registration for the Children's Program is on a daily basis. Each day is available at a cost of \$35.00 per child.

Canadian Dental Association

PHOTOGRAPHY CONTEST

to be held at the CDA Annual Dental Meeting
April 28 to May 1, 1993 • Hosted by the ODA

SPONSORED BY HENRY'S CAMERAS

CONTEST RULES

1. Contest is open to all registrants of the CDA Annual Dental Meeting.
2. Maximum of three photographs per person.
3. Only UNFRAMED colour or black and white, no larger than 16" x 20" will be accepted.
4. Categories for the contest are:

PEOPLE	NATURE	ACTION
A: Kids	A: Its Beauty	A: Sports
B: Aging	B: Its Preservation	B: Motion
5. All decisions made by the Judge are final. Prizes will be awarded at the discretion of the Judge and the Photography Committee. Major prizes will be awarded for each category, plus best overall shot.
6. Entries should be mailed or brought in person to Dr. Warren Hing, Ontario Dental Association, 4 New St., Toronto, by April 19, 1993. Please include full name and address on the back of each entry.
7. Winners will be announced during the Annual Meeting. Registration will be verified before prizes are awarded.
8. Photographs may be retrieved by the contestants after 1:00 p.m. on May 1, 1993.

For more information, call the ODA at 1-416-922-3900.

ONE FORM PER PERSON

PRE-REGISTRATION FORM • Please PRINT

To ensure your requests are accommodated – register early. Advance registrations will be accepted until March 5, 1993. Each on-site registration will be subject to a \$27.00 administrative fee (GST included).

SURNAME: FIRST NAME: SEX: M F
ADDRESS: (Street) (City) (Province)
TELEPHONE: () () () () () () (Residence)
(Postal Code) (Office)
CDA Membership Number: License Number:

LIMITED ATTENDANCE COURSES • WEDNESDAY APRIL 28

Burton Press, D.D.S. – PRACTICE MANAGEMENT – All-day Lecture
Dentist (7% GST included) \$ 195.00
Staff (7% GST included) \$ 95.00
Terry Donovan, D.D.S. – RESTORATIVE – All-day Lecture
Dentist \$ 195.00
Staff \$ 95.00
Jeff Miller / Charlotte Peer Miller – ENHANCING THE CAREER OF DENTAL RECEPTION – All-day Lecture
Dentist (7% GST included) \$ 95.00
Staff \$ 95.00

Torsten Jemt, D.D.S., Ph.D – IMPLANTS – Hands-on Program
• 1 1/2-DAY COURSE: WEDNESDAY AND THURSDAY (A.M.) •
Dentist (limited to 48 participants) \$ 350.00

LIMITED ATTENDANCE COURSES • SATURDAY MAY 1

Donald Yu, D.M.D. – ENDODONTICS – Hands-on Program
Participation in theoretical lecture all day Friday, April 30 is a pre-requisite.
Dentist (limited to 30 participants) \$ 195.00

* GST is included in the Limited Attendance Practice Management courses. GST is not charged on Limited Attendance Scientific courses. Lunch is included in Limited Attendance courses.

ANNUAL MEETING • APRIL 29, 30 and MAY 1

Choose only one delegate type. 1 registrant per form.

☐ DENTIST (Includes: Scientific sessions, exhibits)
Member, CDA or ODA \$ Nil
Non-member, Others (7% GST included) \$ 155.00
☐ DENTAL HYGIENIST (Includes: Scientific sessions, exhibits)
CDHA / ODHA Member (7% GST included) \$ 99.00
Non CDHA / ODHA Member (7% GST included) \$ 120.00
Please include proof of membership or non-member fee will apply.

☐ DENTAL ASSISTANT (Includes: Scientific sessions, exhibits)
CDAA / ODN & AA Member (7% GST included) \$ 69.00
Non CDAA / ODN & AA Member (7% GST included) \$ 99.00
☐ ADMINISTRATIVE PERSONNEL / OFFICE MANAGER / RECEPTIONIST (Includes: Scientific sessions, exhibits)
CDAA / ODN & AA Member (7% GST included) \$ 69.00
Non CDAA / ODN & AA Member (7% GST included) \$ 99.00
☐ TECHNICIAN
(Includes: Scientific sessions and exhibits) (7% GST included) \$ 99.00
☐ SPOUSE / GUEST (Includes: Scientific sessions, exhibits)
Program Registration (7% GST included) \$ 50.00
Thursday Tours and Luncheon (opt.) (7% GST included) \$ 60.00
Friday Tours and Luncheon (opt.) (7% GST included) \$ 60.00
☐ CHILDREN (6 to 12 years) Child's Age: \$ 35.00
Thursday program (7% GST included) \$ 35.00
Friday program (7% GST included) \$ 35.00

STUDENTS MAY REGISTER ON-SITE ONLY.

☐ SOCIAL EVENTS
Opening Ceremony – Thursday, April 29 (Subject to space availability)
Will attend ☐ Yes ☐ No \$ Nil
La Cage – Thursday, April 29 (per person) (7% GST included) \$ 20.00
President's Gala – "A Cavalcade of Cultures" – Friday, April 30 (per person) (7% GST included) \$ 75.00
FUN RUN – Saturday, May 1 (A.M.) (7% GST included) \$ 20.00
MATINÉE PERFORMANCE Elgin Theatre – Saturday, May 1 (2 P.M.)
"Joseph and the Amazing Technicolor Dreamcoat"
(Limited number of tickets available) (7% GST included) \$ 80.00
TOTAL \$

The above registration fees are paid by

☐ I wish to pay the above total by credit card: ☐ MasterCard ☐ VISA ☐ AmEx
Card#: Expiry date:
Signature of Cardholder:
☐ I enclose a cheque payable to the Canadian Dental Association.
Post-dated cheques will not be accepted.

NOTE: Credit card orders can be faxed directly to CDA Annual Meeting at 1-613-523-3062.

ACCOMMODATION

☐ Hotel Registration Form enclosed for (number of) rooms.
☐ Do not require a room / Other arrangements made

Mail registration form with payment to:

1993 CDA Annual Dental Meeting
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

CANCELLATION POLICY:

Cancellation received, in writing, on or before March 5, 1993 – full refund.
Cancellation received, in writing, after March 5, 1993 – subject to a 25% administrative charge.
No refund after April 17, 1993

Dentists, Assistants, Hygienists, Office Personnel & Technicians registering by March 5, 1993 will be eligible to win two tickets anywhere Air Canada flies in Europe and North America!

1993 CANADIAN DENTAL ASSOCIATION ANNUAL DENTAL MEETING

April 28 – May 1, 1993 • Toronto

Hotel Reservation Form

Please check appropriate category:

☐ Dentist ☐ Hygienist ☐ Assistant ☐ Office Personnel ☐ Exhibitor (Company name: _____)

☐ Other (please specify) _____

Name: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Telephone: (____) _____ (____) _____
(Residence) (Office)

Type of Room:

☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

Special Requests: _____

Indicate your hotel choice* (by numbering the boxes):

- ☐ L'Hotel (CDA Headquarters) \$ 140.00 single / double
☐ Royal York (CDA Headquarters) \$ 125.00 single / double
☐ SkyDome Hotel \$ 125.00 single / double
☐ Holiday Inn on King \$ 99.00 single / double

* Prices do not include GST, PST or CCT.

Arrival Date: _____ Arrival Time: _____ Departure Date: _____

All changes and/or cancellations must be made *IN WRITING* through CDA Conventions. Fax to (613) 523-3062

In order to reserve a room, a guarantee for the first night is essential. The guarantee will apply to the first night ONLY.

To cancel your reservation advise CDA Conventions at least three (3) days prior to your arrival.

CHEQUES WILL NOT BE ACCEPTED.

☐ MasterCard ☐ American Express ☐ VISA Card Number: _____ Expiry Date: _____

Signature: _____

Send Reservation Form to: CDA Annual Dental Meeting, Canadian Dental Association,
1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6

DEADLINE for Reservations: March 5, 1993

Confused about infection control?

We can help

The amount of information generated today about infection control is overwhelming. To clarify the confusion, ignore the claims and focus on the facts.

FACT: The CDA and CDC have both stated that all heat stable dental instruments should be routinely sterilized between use by autoclave, dry heat or chemical vapor.

FACT: There are many surfaces and instruments in a dental operatory which cannot undergo sterilization. A high-to-intermediate level disinfectant is therefore required. For complete disinfection, you want a tuberculocidal, broad spectrum kill, an EPA and ADA acceptable product, non-corrosive to instruments and as non-toxic as possible.

FACT: Pathex, a potent disinfectant from the Block Drug Company, is a broad spectrum, dual synthetic phenol which is bactericidal, virucidal, fungicidal, pseudomonacidal, and tuberculocidal in just 10 minutes.

FACT: Pathex is intended for use as a surface disinfectant (a unique non-aerosol sprayer bottle is available for this purpose); a holding solution (a special detergent formula starts cleaning action chairside); and for immersion disinfection of semi-critical instruments.

FACT: The combination phenol formulas based on o-phenylphenol (9%) and o-benzyl-p-chlorophenol (1%), when compared with glutaraldehydes, are less corrosive to metal instruments, will not yellow skin or release irritant fumes or odor, and are less toxic.¹

FACT: Pathex is biodegradable.

When all the "noise" is eliminated, so is the confusion. The choice is clear — Pathex for your disinfection needs.



solution désinfectante pour instruments
et dispositifs dentaires

Pathex

Disinfectant Solution for Dental
Instruments and Devices

Bactericidal	Bactericidal
Virucidal	Virucidal
Fungicidal	Fungicidal
Pseudomonacidal	Pseudomonacidal
Tuberculocidal	Tuberculocidal
Active Ingredients	
o-Phenylphenol 9.0%	o-Phenylphenol
o-Benzyl-p-chlorophenol 1.0%	o-Benzyl-p-chlorophenol

Non corrosive
Odeur agréable
350 ml

Non rusting
Pleasant fragrance

Pathex DIN 019336

¹ American Dental Association Council on Dental Therapeutics. Acceptance of (synthetic phenol) disinfectant for instruments and equipment. JADA 110 394, 1985



Dental Products Division
Block Drug Co. (Canada) Ltd.,
Toronto, Ontario M4B 3E3
1-800-268-5747

Quality Products for Dental Health

Pathex

An effective disinfectant solution for dental instruments and devices.

The Enigma of Amalgam in Dentistry

Derek W. Jones, BSc, PhD, FRSC(UK), FADM

The enigma of amalgam in dentistry is inextricably bound up with truth, knowledge, rights and health. Rather surprisingly, it is now also bound up with the feathers of Swedish museum birds and the actions of a Chisso Corporation acetaldehyde factory in Japan.

Clearly, ascertaining scientific truth is a very intricate and complex matter. But scientific truths must be constantly reevaluated. In essence, they must change as new observations and discoveries are made. The custodians of scientific knowledge must, therefore, develop a tentative but firm attitude toward present-day truths, and a readiness to revise them as required.

This paper is not intended to be a review of the voluminous literature that has already been published on dental amalgam and the health hazards associated with mercury. In fact, the author was motivated into writing on amalgam because of the Swedish government's recent enactment of strict environmental pollution legislation. The new regulations may ultimately cause the use of dental amalgam in the Swedish health care system to come to a premature end.

During the past 10 years, discussions about the possible health risks associated with the use of amalgam as a dental restorative material have flared up periodically. This has typically led to extensive, and primarily negative, media coverage. As a result, dental scientists and dental associations have made a point of reminding the public that dental amalgam has been used extensively as a tooth restorative material for nearly 150 years. The public have also been informed that between 100 and 200 million North Americans have silver amalgam restorations in their mouths, and that these restorations account for 75-80 per cent of all single-tooth fillings in this population.

A similar situation exists in Europe. Eley and Cox¹ have estimated that during the 1970s and early '80s, 50 per cent of England and Wales's population of 50 million individuals received at least

one amalgam restoration each year. Similarly, according to the Institute of German Dentists, close to 38 million individuals received amalgam restorations annually in the former West German Republic. If the claims made in the media relating to amalgam were valid, many of these people should exhibit symptoms of mercury toxicity, and a large number of them should be suffering from a variety of illnesses. This is clearly not the case.

Responsible dental professionals have continually reminded the public that amalgam's durability and cost effectiveness have made it the material of choice for most single-tooth restorations. In spite of this comforting reassurance, the use of mercury in dental amalgam continues to attract unreasonably adverse publicity. Scare tactics based upon unscientific data have been used by some members of the media as well as by some members of the dental profession. As a result, the dental profession has faced increased public pressure to consider the use of alternative materials to replace posterior tooth structure.

The seemingly constant pronouncements about the toxic effects of mercury and the suggested links between dental amalgam and disease have confused and frightened the general public. While there is no scientific evidence whatsoever to support such claims, they continue to fuel the anti-amalgam fire. Jones² has argued that the media is not the place to present preliminary research results, especially when they involve an emotionally-charged subject such as mercury poisoning. In actual fact, research results should be peer reviewed prior to publication, debate should be conducted by scientists, and the experiments should be repeated within the scientific community before any data are released to the public. This is the way that science should proceed in its development of new knowledge.

The use of dental amalgam has been strongly debated in Sweden, Germany, the United States and Canada. Some

critics have claimed that the mercury released from amalgam restorations may cause severe health hazards. These arguments are based on studies dealing with the release of mercury from amalgam fillings and its subsequent uptake into the body due to inhalation and swallowing. Some researchers claim that a substantial number of individuals are suffering from a variety of illnesses as a result of their exposure to mercury. However, no scientific evidence has been produced to show any valid causal relationship between the use of dental amalgam restorations and ill health.

Some researchers believe, incorrectly, that it is a simple matter to test patients to determine their reaction to the presence of amalgam restorations. Both CDA and the American Dental Association (ADA) recommend that tests for hypersensitivity to mercury should only be performed by a specialist qualified as an allergist or dermatologist.

A skin patch kit for testing mercury hypersensitivity was developed for the dental market several years ago. However, the use of this test has been strongly discouraged by Mackert.³ According to Mackert, the choice of allergen and the method recommended for interpreting the response account for the large (20-25 per cent) number of positive responses reported by users of the patch test kits. Nevertheless, many practitioners may have unknowingly used this doubtful test as the basis for removing a patient's amalgam restorations.

Similarly, Horsted-Bindslev et al⁴ have stated that: "...When skin testing has been carried out, it is frequently taken as proof that the patient is allergic to those antigens causing positive reactions. But a positive reaction doesn't prove the role of this antigen in the current affliction." And Mjor, in a 1991 paper,⁵ wrote: "...The removal of any restoration, whether it is made of amalgam, composite resin, or any other material, is unethical if it is done on a dentist's diagnosis and treatment of systemic diseases. Is this so difficult to understand?"

Interestingly, one of the strongest arguments in support of amalgam's safety relates to the lack of health problems and mercury-related symptoms within the dental profession itself. Reports have been made on the levels of mercury found in the air of dental offices, and the mercury content in the hair and nails of dental personnel has been measured.^{6,7} Jones et al's study⁷ concluded that while atmospheric mercury vapor is a very significant factor in the contamination of a dental office, direct mercury contact by dental personnel during the preparation and handling of amalgam also occurs readily, even with the use of disposable capsules and covered amalgamators.

As a group, dentists and dental assistants have a much higher level of exposure to mercury vapor than a dental patient with a large number of amalgam fillings. Therefore, any problems and symptoms associated with mercury exposure would be expected to show up in this population. In fact, it should be possible to clearly demonstrate that dentists and dental assistants have a significantly higher prevalence of the symptoms and disorders known to be associated with mercury exposure.

Most studies involving dental professionals have used subjective questionnaires rather than objective physiological and laboratory measurements. However, symptoms have been documented and reported for various non-dental industrial manufacturing situations in which mercury is used at exposure levels well above those found in the dental office.

In fact, examinations of the health, mortality, and morbidity rates for dentists have shown that they are not significantly different from those of the general population. Osborne⁸ has quoted 18 references, all of which support the conclusion that no evidence is available to show that the health of dentists and dental personnel is adversely affected by working in close contact with mercury. A paper by Wirz et al⁹ compares the level of mercury in the blood and urine of three groups of individuals, made up of dentists and dental assistants as well as two control groups, one with and one without amalgam restorations. The mercury levels for the two control groups with and without amalgam restorations were not significantly different, but the mercury readings of the dental personnel were double those of the control groups.

Unfortunately, the unfounded belief that exposure to the mercury released

from dental amalgam restorations may cause illness has been dramatically and sensationally exploited by the media. In response, the scientific community has organized a number of symposia, conferences and in-depth scientific studies. In general, these gatherings have brought together experts for the purpose of reviewing the status of the scientific knowledge related to the mercury toxicity and amalgam. For example, a National Institute of Health (NIH) Technological Assessment Conference, sponsored by the National Institute of Dental Research, was held in August 1991. Similarly, a World Health Organization (WHO) task group on environmental health criteria for inorganic mercury met in Bologna, Italy, in September 1989. This meeting was sponsored by the Italian Ministry of the Environment. The Swedish Medical Research Council held its state-of-the-art conference in Stockholm in 1992. These conferences and meetings have allowed dentists, scientists, toxicologists and biomaterials scientists to review the properties and potential side effects of using dental amalgam as a restorative material.

Considerable debate has also taken place within the general scientific community. Current scientific research indicates, unequivocally, that the mercury from dental amalgam restorations has a negligible effect on humans. Enwonwu¹⁰ has pointed out that claims linking the use of amalgam restorations to neurological, cardiovascular and immunological diseases are in conflict with the widely publicized scientific views. Enwonwu¹⁰ has further pointed out that hypersensitivity reactions, which affect only a small proportion of patients and members of the dental profession, are the only scientifically-confirmed health hazard resulting from the use of mercury in dentistry. In spite of this, however, claims that the use of amalgam in dentistry may be harmful to patients continue to be made. Media reports still suggest that amalgam restorations can lead to a variety of diseases and maladies, ranging from multiple sclerosis to epileptic seizures. Such claims, while scientifically unsubstantiated, have alarmed impressionable members of the public. The NIH conference, the Swedish MRC conference and the WHO task group have all agreed that there is no conclusive scientific evidence to support these contentions.

On occasion, the media has highlighted the spectacular recovery, or the dramatic disappearance of severe symptoms, of patients with life threatening

diseases whose amalgam restorations have been removed. Scientific evidence rather than anecdotal case stories must be the basis for any sound recommendations or decisions on the future use of amalgam in dentistry. Quite simply, the fact is that the process of removing amalgam restorations would inevitably lead to a significant increase of mercury levels within a patient's body. It is not unreasonable to suppose that this would result in an increase in the severity of the patient's symptoms.

In effect, if mercury was the cause of the patient's problem, he or she would feel much worse rather than much better immediately following the removal of his or her amalgam restorations. This simple logic seems to have escaped the people who have reported on such immediate and miraculous recoveries.

One study that has not been highlighted by the mass media is a German paper by Muller-Fahlbush and Wohning,¹¹ which found that there was no improvement in the health of 28 of 29 patients who had their amalgam restorations removed.

Gamma-2-Amalgam Banned in Germany

It was recently reported in *Die Zahnarzt Woche* that the Public Health Department in Berlin has initiated the withdrawal of γ -2-(gamma-2)-containing amalgam from the German market. This reflects the fact that 15 years of solid clinical and laboratory research have positively and unequivocally demonstrated that high copper (γ -2-free) amalgams possess enhanced chemical and physical properties, as well as producing superior clinical performance. A spokesperson for the Public Health Department in Berlin stated that action would be taken to withdraw the licence for the manufacture of γ -2- containing amalgam, which is believed to account for just five per cent of all amalgam materials used in Germany. The γ -2-phase is the mercury-tin phase, which renders an amalgam alloy much more susceptible to corrosion and significantly lowers the strength of the alloy. Work by Jorgensen¹² suggested that mercury released from the breakdown of the mercury-tin phase (γ -2-phase) is absorbed by the silver-tin phase, resulting in the expansion and protrusion of the cavo-surface margins. Jorgensen¹² theorized that this increased marginal breakdown was associated with the phenomenon of expansion. Research by Sarkar and Greener¹³ and Holland and

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Asgar¹⁴ clearly established that the γ -2-phase of amalgams was the most electrochemically active phase, and would undergo selective attack in a simulated clinical environment.

Sutow et al¹⁵ have also shown that a strong and significant correlation exists between the *in vitro* corrosion of dental amalgams and established clinical ratings. Crevice corrosion propagation for γ -2-free versus γ -2-containing amalgams was characterized by lower acceleration and maximum rates during the most dynamic period. In addition, the γ -2-phase causes the alloy to exhibit higher creep than the high copper (γ -2 free) alloys. Amalgam restorations containing the γ -2-phase will also tend to release more mercury into the mouth following corrosion. As early as 15 years ago, David Mahler¹⁶ stated clearly that "...the stage is set for the direction to take in improving dental amalgam; i.e., get rid of the γ -2-phase."

The German decision comes almost 30 years after the Canadian research by Innes and Youdelis¹⁷ that led to the development of high-copper dispersion-strengthened (γ -2-free) amalgam. Many within the dental biomaterials scientific community will welcome Germany's anti- γ -2 stance, even though it takes away the freedom of choice of some practitioners to use alternative materials.

A small number of practitioners in Germany may well prefer the handling characteristics of some of the γ -2-containing amalgams. For these individuals, the proposed ban is unfortunate, but they can rest assured that they will be providing a better amalgam restorative material for their patients in the future.

Presumably concerned that their recent ban of γ -2-containing amalgams might be misinterpreted, the Public Health Department has reaffirmed its earlier statement that there is no conclusive evidence to suggest that the mercury in amalgam causes headaches and rheumatism or cancer and multiple sclerosis. It also issued a press release stating that amalgam should only be used on molars, and that only γ -2-free amalgams are to be used.

Despite its recommendation that γ -2-containing amalgams should not be used, the Public Health Department does not advocate the removal and replacement of existing γ -2-containing amalgam restorations unless there is strong evidence of an allergic reaction.

The German authorities have further recommended that amalgam restorations be avoided in patients with kidney complaints and in children under six years of age who, they claim, are generally believed to have a higher mercury sensitivity. There is no scientific evidence to support this recommendation, however. For example, although work by Kostial et al¹⁸ demonstrated a higher degree of absorption of inorganic mercury in newborn rats after oral exposure to mercuric chloride, another report has shown that the immature rodent kidney is less sensitive to mercury exposure than the adult rat kidney, as less accumulation takes place in the kidney of the newborn pups (Daston et al¹⁹). However, the IPCS report of the World Health Organization,²⁰ makes a clear statement that "no information is available concerning age effects on humans."

It has been claimed that the well-publicized data from Vimy et al²¹ showed impaired kidney function and kidney damage in sheep following the placement of 12 amalgam fillings. According to Vimy, a 60 per cent loss in the glomerular filtration rate of these sheep demonstrated the damaging effects of the mercury from the amalgam restorations. However, Osborne⁸ has made reference to a 1991 Food and Drug Administration (FDA) meeting where Dr. R. Malvin, a renal physiologist from the University of Michigan, concluded that the data of Vimy et al²¹ actually showed improved kidney function. Malvin²² suggested that the reduced filtration rate observed by Vimy could be attributed to the sheep not eating rather than to the presence of mercury.

Still, the Public Health Department in Berlin has reaffirmed its position on using alternatives to amalgam during pregnancy. Again, there is no valid scientific evidence to support this recommendation, although the WHO Study Group²³ stated in 1980 that: "The exposure of women of childbearing age to mercury vapor should be as low as possible." In addition, the group stated that "it was not in a position to recommend a specific value."

Research by Wannag and Skjaerasen²⁴ showed higher concentrations of mercury in the placenta and fetal membranes of some dental personnel. In contrast, a 1987 paper by Sikorski et al²⁵ concluded that exposure to mercury vapor in the dental workplace would not affect female reproduction. Studies by Brodsky et al²⁶, Ericson and Källén²⁷ and Heidam²⁸ found no differ-

ence between dental personnel and control groups for spontaneous abortions, birth weight, infant survival, and congenital abnormalities.

Ericson and Källén²⁷ reviewed the birth records for 8,157 children born between 1982 and 1986. In all, 1,360 of these children were born to dentists, 6,340 to dental nurses and 457 to dental technicians. The analysis took into account such factors as the age of the mother and the number of children in the family. In addition, the number of stillbirths and spontaneous and induced abortions treated in hospitals was examined. It was found that there was no tendency toward an elevated rate of malformation, abortion, or stillbirths for this dental group compared with the general population. Similarly, an extensive review of the subject by Horsted-Bindslev et al⁴ concluded that, according to present knowledge, "provided that proper mercury hygiene is adopted, no symptoms among the dental personnel and their offspring can be related to the use of mercury and silver amalgam."

It should be recognized, however, that the mammalian reproductive process covers a relatively long period of time and is extremely complex. This may provide opportunities for a wide range of exogenous agents to disrupt the process. The list of probable agents that are considered to have the potential to cause dysfunction of the reproductive function in women is very long, and incorporates a broad spectrum of potentially toxic agents including pesticides, drugs, heavy metals and large numbers of organic solvents.²⁹

In addition to organic mercury and lead, the list includes anesthetic gases such as aniline, benzene, carbon disulfide, chloroprene, ethanol, ethylene oxide, glycol ethers, formaldehyde, phthalate esters, polychlorinated biphenyls, styrene, tobacco smoke, toluene, and vinyl chloride monomer. Given the number of environmental agents with the ability to disrupt the reproductive process, it is extremely difficult to show a clear cause and effect relationship for a single agent, even when there is a positive correlation between dental personnel and birth defects. Furthermore, in terms of teratology testing for the potential of specific agents to cause human birth defects, extrapolating findings from animal models can never provide absolute results. Positive or negative results from animal tests can give no guarantee that

a chemical agent will or will not cause a teratogenic response in humans. Species response will vary, and the effects of high and low doses may produce very different results.

The Canadian-based research of Innes and Youdelis,¹⁷ which led the way to the development of γ -2-free amalgam alloys, resulted in significantly lowering the amount of mercury released from amalgams in the mouth. The plan by the Germans to withdraw γ -2-containing alloys from the market raises a very important question: Why is it that we have seen significantly more anti-amalgam activity in recent years at a time when we have been using at least 95 per cent γ -2-free amalgam alloys? Surely, it would have been more likely, if dental amalgam restorations presented a problem, that we would have seen it highlighted during the first 120 years, when dentistry only used inferior amalgam alloys containing γ -2.

Swedish MRC Report

The intensity of the growing public concern over the continued use of amalgam as a dental restorative material in Sweden has resulted in government funding being provided to investigate the issues involved. Since 1989, the Swedish Medical Research Council (SMRC) has given "earmarked" grants to support research on amalgam and other dental restorative materials. During April 1992, SMRC held a state-of-the-art conference on dental restorations. The three-day conference, held in Stockholm, examined the "Potential biological consequences of mercury released from dental amalgam." It brought together scientists from various fields to present papers and discuss the subject in plenary sessions. On the third day, the speakers were interviewed by a scientific panel appointed by the Swedish Medical Research Council. The conclusions of this panel are worth reviewing.

- Mercury released from dental amalgam does not, according to available data, contribute to systemic disease or systemic toxicological effects.
- No significant effects on the immune system have been demonstrated with the amounts of mercury which may be released from dental amalgam fillings.
- Allergic reactions to mercury from amalgam fillings have been demonstrated, but are extremely rare.
- In a very small number of individuals,

local reactions, such as lichenoid reactions of the mucosa, may occur adjacent to amalgam restorations as well as adjacent to dental restorations made of other materials.

- There are no data to support the belief that mercury released from dental amalgam gives rise to teratological effects.
- The possible environmental consequences resulting from handling dental amalgam can be controlled by proper waste management, including the installation of efficient amalgam separators in dental offices.
- Available data do not justify discontinuing the use of mercury-containing dental amalgam fillings or recommending their replacement.

The conclusions reached by the Swedish MRC conference are very similar to those contained in the 1991 NIH Technology Assessment Conference statement:³⁰

- Current dental restorative materials can be used effectively for restoring teeth for functional or esthetic reasons. Virtually all restorative materials have components with potential health risks. However, there is no scientific evidence that currently-used restorative materials cause significant side effects. Available data do not justify discontinuing the use of any currently-available dental restorative materials or recommending their replacement.

Another of the NIH conference recommendations that was in agreement with the Swedish MRC statement concerned the desirability of installing devices to recover waste amalgam residues in dental offices to reduce environmental contamination.

The story from the National Health Service in the United Kingdom is the same. In response to a question raised in Parliament, Mr. Hayhoe, the secretary of state for social services, stated: "In our opinion, the use of dental amalgam is free from risk of systemic toxicity and only a few cases of hypersensitivity occur."³¹

Swedish Environmental Concerns

A controversial report on the "Possibilities for Discontinuing the Use of Amalgam as a Tooth Filling Material" was issued by the Swedish National Board of Health and Welfare in September 1992. Commissioned by the Swedish government, the report also sug-

gested a possible discontinuation plan. The Swedish Parliament has already approved a general plan for discontinuing the use of mercury in manufacturing and industry. Suggestions as to how the plan will be implemented, region by region, have been developed by the National Chemical Inspectorate (NCI) and the Swedish Environmental Protection Agency (SEPA).

Sweden's motives for examining the possible discontinuation of dental amalgam use are based entirely on environmental concerns, and not on the potential health hazard to dental patients. Since the early 1950s, Sweden has been one of the world's most vocal environmental advocates. The country's environmental involvement began in reaction to the major environmental pollution caused by the Chisso Corporation in Japan, which was draining industrial waste into Minamata Bay from its acetaldehyde factory. It was the subsequent Minamata disease disaster (mass poisoning by mercury) that brought the dangers of mercury pollution home to the Swedes.

In 1960, the Swedish pulp and paper industry was using 24,000 kg of mercury a year. The use of mercury in pulp and paper processing was banned six years later. Sweden's environmental scientists began to investigate industrial pollution due to mercury in the 1950s and '60s. The mercury levels of the country's bird population were examined first, since methyl-mercury seed dressings had been in use in Sweden since the 1940s, and mercury is deposited in the feathers and other keratinous tissues of birds in large relative to other tissues.

Initially, feathers taken from museum specimens of seed-eating birds were analyzed. Low mercury levels were found in birds that had been captured from 1820 to 1940, but a rapid rise was recorded for birds taken in the 1950s and beyond.³² The Swedes banned the use of methyl mercury-coated seed in 1966.

An analysis of feathers taken from museum specimens of birds of prey, especially those of fish-eating birds, provided somewhat different results, however. It was found that mercury levels started to increase slowly from about 1890 onwards, and that this mercury was almost entirely in its methyl form.³³ Based on this data, Swedish scientists postulated that it was possible to plot the rise of the industrial revolution by analyzing the mercury levels found in

the feathers of these species of birds.

The presence of mercury in the food chain became a major concern for Sweden in the 1960s, as a result of the pollution emanating from the country's paper mills and the chlorine-alkali industries. Eggs and other Swedish foodstuffs were found to have mercury levels between two and four times higher than identical products produced in other European countries. Swedes were also told not to eat fresh water fish more than once a week because of its high level of mercury contamination.

Historically, despite Sweden's recent decision to ban the use of mercury in industry, the major cause of mercury contamination in the food chain was the use of methyl mercury-coated seed. The use of this seed was banned over a quarter of a century ago, however, and fortunately belongs to a bygone era.

It is worth noting that Sweden, to date, is the only European country that plans to prohibit the use of dental amalgam. Denmark is also discussing this issue, however, and the environmental aspects of mercury being discharged by dental services – partly by the use of mercury-separators in dental clinics – have been highlighted in a number of other countries as well. One would hope that the Swedish government took note of the MRC's conclusion that: "The possible environmental consequences of mercury contamination as a result of handling dental amalgam can be controlled by proper waste management, including the installation of efficient amalgam separators in dental offices."

If this is true, it would be illogical to discontinue the use of dental amalgam for purely environmental reasons. In complying with the request from the Swedish Parliament, the National Board of Health and Welfare (NBHW) carried out an internal review of the use of amalgam in dentistry. To complete this task, NBHW called on expert representatives from NCI, the Scandinavian Institute of Dental Material (NIOM) and SEPA.

The discontinuation plan for amalgam proposed by NBHW's investigation team suggests a step-wise discontinuation based on different patient age groups. Consideration will be given to current developments in dental health, the availability of dentists and dental technical resources, the availability of alternatives to amalgam, as well as to the present knowledge and skills of dentists and their level of experience with alternative fillings materials. The

investigation team has suggested that:

- Amalgam should not be used for fillings in temporary teeth (milk teeth) after July 1, 1993.
- Amalgam should not be used for fillings in the permanent teeth of children and teenagers under 20 years of age after July 1, 1995.

To date, Sweden has yet to make a decision on further steps to restrict or stop the use of amalgam in adults. However, the NBHW report states that the placement of amalgam fillings in adults could potentially be discontinued as of 1997.

Ecology is not as simple a matter as it may seem, however, and ambiguous decisions are commonplace. How, for example, can the well-being of all the earth's life forms, and indeed the very future of the planet, be balanced against the current oral health needs of the human population?

It is not unreasonable to expect academic scientists to be morally responsible for their research. Politicians make decisions based on public opinion and the availability of finances. In Sweden, the discontinuation of amalgam as a tooth filling material in temporary teeth will only require a very small increase in the need for resources, as alternative materials are already available and widely used. However, the investigation team calculated that if the use of amalgam for filling permanent teeth in children and teenagers was discontinued, an additional 25 full-time dentists as well as an extra cost of 1.0 to 1.3 million Swedish crowns would be required. As an exercise, the investigation team also calculated the costs of a complete and immediate discontinuation of amalgam use. This was done to give a basis to the arguments of those who favor such a plan. The direct increases in cost were calculated to be about 1.0 to 1.3 billion Swedish crowns. However, if this plan was adopted immediately, 700 additional full-time dentists would be required to preserve the present level of dental care, over and above the number of dentists necessary to ensure that filling therapy could be maintained. But according to the directive from the Swedish government, dental care personnel resources must not increase due to the discontinuation of amalgam use.

The investigation team has also considered other costs associated with the use of amalgam, such as the handling of mercury-rich amalgam waste. It would be extremely valuable if the Swedish National Board of Health and

Welfare produced a genuine cost-benefit analysis with respect to the termination of amalgam use, based on the environmental issues. This would compare items such as the cost of installing effective mercury traps versus the use of alternative materials (1.0-1.3 billion Swedish crowns) and the provision of an additional 700 dentists. It is difficult to imagine that the installation of efficient and effective amalgam separators (assuming that they are readily available) in dental clinics, combined with an effective solid waste collection program for amalgam scrap, can possibly cost more than discontinuing the use of amalgam.

We should not judge dental amalgam's contribution to the environmental pollution based on data and statistics that are not applicable to modern dentistry. It is well known the decline in the incidence of dental caries has resulted in significantly lower amounts of amalgam being used. In addition, the use of capsulated mercury-alloy mixtures, modern amalgamators and techniques has made it possible to significantly reduce the pollution in the dental office.⁶ Scrap amalgam is much easier to control and collect with the modern capsule systems. The presence of dental mercury in sewage sludge, which dates from an earlier period of dental history, should not be used to convict and condemn modern dental procedures. We should not create unrealistic environmental standards for the levels of mercury discharged in the waste water emanating from dental offices. Any discharge standard that sets the permitted level for mercury at a higher level than is found in tap water is clearly inappropriate. Realistically, modern dentistry plays a very small part in environmental pollution. This does not mean, however, that we should not make a serious effort to minimize, if not eliminate, the environmental contamination caused by dental mercury. Still, the major environmental concern is the formation of organic mercury compounds, which can occur in organic anerobic situations such as those found in sewage sludge.

It is clear that the long-term cost to Sweden of not using amalgam will increase with time. The Swedish investigation team's estimates show that over a 60 year period, the costs of keeping a tooth repaired with composite as opposed to amalgam could be up to four times higher due to the shorter lifespan of the composite. Furthermore, the need to replace non-amalgam restorations

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more frequently than amalgam fillings carries with it the inevitable consequence of additional tooth structure being lost over time. It is difficult to put a price on this loss of tooth structure until the entire tooth is lost.

Cost-benefit analysis systems are at best a blunt instrument, and rely heavily on the specific questions being asked. The economics of using different types of dental restorative materials has often been debated within the dental profession. A paper by Ivar Mjor³⁴ has reviewed the cost of dental restorative treatment over a period of 60 years. This study was based on the present cost of restorations at the time of insertion and the median longevity of the different types of restorations. Theoretic extrapolations indicated that the long-term cost of two- or three-surface gold and composite restorations in permanent teeth is similar, and about four times greater than it is for amalgam restorations. The cost of one-surface composite restorations was found to be about two to 2.5 times higher than the cost of amalgam restorations, while small gold restorations were estimated to cost five times more. Due to the short to median longevity of composite restorations in primary teeth, their cost can be estimated to be five times higher cost than the cost of comparable amalgam therapy over a 10-year period. The Swedish National Board of Health and Welfare investigation team recognized that the existing alternatives to amalgam significantly increase all dental care costs. At the same time, the team did not think that a completely new alternative to amalgam was likely to be developed during the next five to 10 years. However, it was accepted that current alternative materials will undergo improvement and development, and that the costs for some of these materials could fall.

According to NBHW investigation team estimates, 203,000 amalgam restorations were placed within the child and youth divisions of the national dental service in 1991. Complete statistics are not available, but it appears that the proportion of amalgam fillings relative to the total number of filling has decreased in recent years. The NBHW report states that a large number of fillings now consist of materials other than amalgam.

For adult dental care, the proportion of amalgam fillings to non-amalgam fillings in Sweden was reported to have decreased from 59 per cent in 1985 to about 29 per cent in 1991. In total, the

number of amalgam fillings used in the private dental care setting in 1991 was estimated at about 1.1 million. Of these, about 740,000 were placed in the adult national dental care system. This accounts for 39 per cent of all fillings placed in Sweden's national adult dental care system in that year.

The NBHW report states that: "The annual consumption of mercury for dental health is currently approximately 1.7 tons." It goes on to say that: "The specific discharge into air and water from dental care constitutes an ever-increasing proportion of the total discharge, since mercury discharge from other sources such as mercury batteries and broken thermometers is successively decreasing. This is in spite of the fact that dental care has reduced its use of mercury in past years."

The environment and health protection authorities in Sweden have frequently demanded that dental services reduce their discharges of mercury into the public sewage network. Approved amalgam separators are, in fact, mandatory clinical equipment in Sweden. According to the report from the Swedish MRC, better management of solid amalgam waste could significantly reduce the loss of mercury from dental offices. SEPA has calculated that sewage sludge presently contains a maximum of 450 kg of mercury per year, of which one third (150 kg) is calculated to have come from dental services.

A March 1992 report by the U.S. Environmental Protection Agency (EPA)³⁵ shows that dental amalgam is a small and declining source of mercury in municipal solid waste. According to the report, the total mercury from all sources in municipal waste peaked in 1986. The report characterizes products containing mercury in U.S. municipal waste from 1970 and extrapolates this data to the year 2000.

Discarded household batteries are by far the major source of mercury in municipal waste, with much smaller amounts being due to discarded light bulbs, paint residues, thermometers, thermostats and pigments. Household batteries accounted for 86 per cent of discarded mercury in 1989. In contrast, dental amalgam was said to represent only 0.56 per cent of discarded mercury, down from 2.2 per cent in 1970 and 1.3 per cent in 1980. It is estimated that by the year 2000 waste mercury from all sources will have declined from 1989 levels by more than 75 per cent. Similar data is not available from Canada, how-

ever, it would be expected to follow the same pattern as in the U.S. It should be noted that the EPA data relates only to solid waste, and not to discharges of mercury into the public sewage network. The mercury discharged into the sewage system poses a much greater concern, as it increases the potential for organic mercury compounds to develop. The biological implications of these compounds are of greater significance and therefore of more concern.

Another factor to consider is the mercury contained in the amalgam fillings of the deceased. The Swedish NBHW report clearly states that the discharge of mercury from crematoria due to the amalgam fillings in deceased persons should be considered in the overall contamination of the environment. However, Rivola et al³⁶ found that mercury contamination by cremation comprised only 0.61 to 1.53 per cent of the total mercury contamination produced by all waste incineration in Switzerland.

Misuse of Statistical Methods

The inappropriate use of statistics can lend further confusion to the enigma of mercury and amalgam in dentistry. In reviewing the literature, it is sometimes difficult to determine if appropriate statistical methods have been used. For example, the conclusion that an experiment did not show a significant difference may actually be a function of using too small a number of experimental subjects. It is clear that not all research lends itself easily to statistical analysis. However, if the data are capable of being statistically analyzed, this should occur. Statistics should not, as Andrew Lang once put it, be used "as a drunken man uses a lamp post for support rather than for illumination." If an analysis has been conducted, it should be reported in the paper, mentioning the type of statistical method used, the number of observations (*n* value), the mean and standard deviation and, at the very least, the *P* value. It is, of course, very important that the correct type of statistical methods is used for the analysis of data. In some cases, a study can only use descriptive statistics. But in other cases it is possible to use an inductive or inferential statistical method to test a hypothesis.

Parametric statistical tests should be used if the data conform to a normal probability curve. The less-powerful non-parametric tests, which make no assumptions concerning the shape of the distribution curve, must be used if this is not the case. Statistics are an

essential and vital tool for the scientist who is dedicated to the establishment of truth. The general dental practitioner who reads the dental scientific literature should have a basic understanding of statistics. Without such understanding, a critical appreciation of the value of reported findings will not be possible.

H.G. Wells once remarked that: "Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write." An evaluation of 62 papers published in the well-respected British Medical Journal in 1977⁵⁵ found that 32 papers had statistical errors, of which 18 were rated as "serious." Five papers made claims that were unsupportable on reexamination of the data. The errors were not errors of statistical technique, but rather errors in the selection and use of statistical techniques, and in the interpretation of the results.

Misinterpretation and Misuse of the TLV

The threshold limit value (TLV) for elemental mercury in the work environment has been set at 50g/m³. It is not unusual for the TLV to be misinterpreted and misused. The problem arises when the TLV is regarded as a fine line between safe and dangerous concentrations. This misinterpretation fails to take into consideration that the TLV is a time-weighted average value, measured over an eight-hour day, which permits excursion above the limit as long as there are equivalent excursions below the limit. The stated TLV also has an inherent safety zone between the limiting value and the concentration capable of producing injury.

Biological Evaluation of Dental Materials

When dentists place biomaterials into their patients' mouths, they clearly have a responsibility with respect to the safety of these materials. Yet very little is known about what constitutes a permissible level of exposure to the leachable constituents of many dental materials, which may or may not be toxic.

Occupational exposure levels have been established for a large number of potentially hazardous compounds and elements. The effects of certain compounds or elements, such as mercury, have been evaluated in a small animal study. These results, which were published in the scientific literature, may not apply to humans, however. In a 1990 paper, Wilson³⁷ pointed out that: "...seemingly very different toxicologi-

cal results can be obtained for what is apparently the same material, depending upon its nature when presented to the animal, the route by which it is presented, and the species used."

Illing³⁸ has evaluated the procedures required to extrapolate occupational exposure limits from toxicity data in man and animals. The author examines the effects found at or around the "No Observed Adverse Effect Level" (NOAEL), and the magnitude of safety factors that can be applied in developing occupational exposure limits for non-stochastic (chance or probability) effects. It is clear, in looking at the relationship between the incidence of stochastic effects and occupational exposure limits, that it is difficult if not impossible to be definitive about a material's potential risks at low exposure levels. This highlights just how difficult it is to interpret the effects of low-level mercury release from amalgam restorations. In actual fact, toxicology presents a bewildering and perplexing situation to both the analytical chemist and the statistician, who are both doing an excellent job in an impossible situation.

Bailey³⁹ has suggested that when animal toxicology studies are extrapolated to man, yet another source of variability must be faced. Brown⁴⁰ and Dixon⁴¹ have both reported on the difficult task of establishing exposure standards for chemicals. A very good review of the complexities of risk assessment has also been published by Clarkson.⁴² This review discusses basic principles of risk assessment in general toxicology. The author outlines how these principles can be applied to assess biological reactions to dental restorative materials, using exposure to mercury from amalgam fillings as an example. His calculations are intended only to provide a simple illustration, since many other factors must also be taken into account, and he clearly states that they are not intended as the last word in the risk assessment of amalgam fillings.

Clarkson explains that the threshold dose level is extremely difficult to determine, with uncertainty occurring as the dose response curve approaches zero. Two dose levels are identified: the LOAEL (Lowest Observed Effect Level) and NOAEL (No Observed Adverse Effect Level).

Presented at the NIH conference in August 1991, Clarkson's paper provides an excellent review of a very complex subject and is of particular value

for the nonexpert. In calculating the "margin of safety," Clarkson used a value of 8.0 µg Hg/day for dental amalgams, based on research by Abraham et al.⁴³ The use of this value in his calculations gave a margin of safety 21 times greater than the NOAEL/human daily intake. If Berglund's⁴⁴ scientifically more acceptable value for mercury vapor release, 1.7 µg Hg/day, had been used instead, the calculated value for the margin of safety would have been 100 times greater than the NOAEL/human daily intake. Berglund's figure represents about one per cent of the corresponding average daily allowable dose for a person in an environment where WHO's threshold limit value (TLV) for elemental mercury in the workplace, 50 µg Hg/day, is attained. The values Berglund⁴⁴ obtained for mercury vapor release from amalgam restorations are valuable, since they are based on measurements made over a 24-hour period.

Vimy and Lorscheider,⁴⁵ in 1985, estimated a daily dose of about 30 µg Hg/day. However, a number of researchers subsequently found that Vimy and Lorscheider's calculations were erroneous.⁴⁶⁻⁴⁹

Statistics has been described as an aid to the art of making decisions in the face of uncertainty. The statistical methods used in toxicology do not lend themselves to simple black and white answers for toxic compounds or for elements present in low levels of concentration, however.

Toxicology has been broadly defined as the study of the adverse effects that chemicals produce within living systems. Paracelsus, in the 16th century, pointed out the basic dilemma that we now face in terms of the toxicological effects on humans of the mercury from dental amalgam: "All substances are poisons. There is none which is not a poison. The right dose differentiates a poison and a remedy."

Conning⁵⁰ has pointed out that the definition of toxicology embodies the classical concept of the effect produced by a chemical being proportional to the administered dose. However, Conning goes on to say that toxicology eventually came to be regarded as an extension of the study of pharmacology. Of necessity, a pharmacological assay must explore the optimum dose in relation to the maximum therapeutic effect. By implication, this also implies the dosage at which the effect is counterproductive.

The close association between toxicology and pharmacology has been

beneficial,⁵⁰ since it has led to the development of scientific principals. These principals recognize that toxicology must involve the perturbation of physiological function, and that a variety of detectable changes are compatible with normal living. Toxicology has now taken a step back from pharmacology, however, and has come to be defined as the study of the adverse effects of chemicals on living systems for the purpose of predicting chemical hazard to man. According to Conning,⁵⁰ this has "...imposed impossible conditions on its practice as a science."

Clayton and Clayton, in their 1981 textbook,⁵¹ cite gaps in knowledge, as well as variable or even contradictory results for low doses of heavy metals such as mercury. In fact, the EPA has classified inorganic mercury as a group O compound, or one that is not classifiable as to human carcinogenicity.

Conclusions

We live in a rapidly changing world. It has been claimed that by the time a child born today graduates from college, the amount of knowledge in the world will have more than doubled. By the time such a child is 50 years old, 97 per cent of everything known in the world will have been learned since the child was born. The elimination of most infectious diseases has occurred in the past 50 years. Today, scientists have a much greater understanding of biological systems, and great strides have been made in diagnostics and genetics. Toxicology is emerging as a true science. Statistical methods have been refined and improved, and are now used more effectively to allow us to see the implications of our data more clearly. The detection limit of our analytical instrumentation has gone from micrograms to the sub picogram level in the past 40 years. In addition, 80 per cent of all the recognized scientists who have ever lived are still alive today.

Scientists have to keep an open mind on every issue. As Bertrand Russell once said, "Even when all the experts agree, they may well be wrong." And Albert Einstein reminded us that it would only take one experiment to prove him wrong.

The worldwide pollution of the environment by mercury has been significantly reduced since the 1970s. Further significant reductions in mercury pollution can be made by simple legislation to regulate the disposal of household batteries, which should not end up in municipal refuse dumps. Throughout

the world, we are seeing increasing concern for the future of our planet. In fact, concern for environmental issues is a major factor in our lives. However, the quality of the oral health care provided to our population should not be sacrificed in the cause of ecology.

It has been said that we know only what we can measure. We can measure the mercury given off from amalgam restorations, and we can measure the amount of mercury present in the environment. And while we have not yet measured any causal relationship between dental amalgam and disease, we can measure the superior clinical performance of dental amalgam compared to other restorative materials. It is possible to take action to clean up our environment without banning the use of dental amalgam. Our garbage dumps are full of discarded household batteries, which are by far the greatest source of mercury in municipal solid waste, accounting for almost 90 per cent of the mercury in U.S. refuse in 1989.

Marie Curie once said: "Nothing in life is to be feared, it is only to be understood." Let us hope that we can understand the enigma of amalgam in dentistry, and that common sense prevails.

The development of any new materials that may challenge the use of traditional restorative materials will have to satisfy the rigors of scrutiny for biocompatibility. According to Harold Stanley,⁵² dental materials and devices are now being treated more like drugs, and have to meet the safety and efficacy requirements of drugs and medical devices. Biocompatibility is the key word. A draft international document (International Standards Organization Technical Report No. 7405), is currently being revised with the objective of producing an International Standard. The document specifies various types of tests (initial, secondary, and preclinical usage tests). However, Stanley⁵² believes that no amount of experimental study can guarantee absolute safety for any substance.

With all of our scientific knowledge, we still cannot produce a perfect system to give absolute answers for biological safety. However, the reasons behind the Swedish government's desire to phase out the use of dental amalgam are not related to any health hazard to the patient. The Swedish MRC panel⁵³ have concluded that: "In Swedish clinical studies, including large numbers of individuals claiming to suffer from vari-

ous somatic symptoms and diseases caused by amalgam, the patients were subjected to detailed medical and dental examinations and follow-up for several years. None of these studies support the view that the complaints of the patients studied were related to the presence or number of amalgam fillings."

In presenting the case for the continued use of amalgam as a dental restorative material of choice, we should not yield the high moral ground to those who defend the ecology of our planet. The simple fact is that the dental profession, and faculties of dentistry worldwide, could reap substantial financial benefits from a decision to discontinue the use of dental amalgam. Banning dental amalgam would clearly be a monetary bonanza for the dental profession. More dental personnel would need to be trained and educated, and the dental profession would be required to carry out significantly more restorative procedures. However, this would be at the expense of the quality of the oral health care provided to the general population. Many would be denied the benefits of dental care because of the prohibitive costs involved. The high moral ground belongs to those who believe that the quality of the oral health of the population is worth paying for. We must accept that the price for retaining the use of dental amalgam may be that we have to ensure that the ecological consequences of this stance are satisfied. In the words of the Swedish MRC panel⁵⁴: "With proper mercury hygiene measures, mercury emerging from dental amalgam does not *per se* represent an environmental hygiene problem."

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References

1. Eley, B.M. and Cox, S.W. Mercury from Dental Amalgam Fillings in Patients. *Br Dent J* 163:221-226, 1987.
2. Jones, D.W. Giving Science a Bad Name. *J Canad Dent Assoc* 57:291-293, 1991.
3. Mackert, J.R. Hypersensitivity to mercury from dental amalgams. *J Am Acad Dermatol* 12:877-880, 1985.
4. Horsted-Bindslev, P., Magos, L., Holmstrup, P. et al. *Dental Amalgam-A Health Hazard?* Munksgaard, 1991.
5. Mjor, I.A. Letter to the Editor, *Quintessence Int* 22:331, no. 5, 1991.
6. Jones, D.W., Sutow, E.J. and Milne, E.L.

Survey of Mercury Vapour in Dental Offices in Atlantic Canada. *J Canad Dent Assoc* 49:378-395, 1983.

7. Jones, D.W., Sutow, E.J. and Holden, R.A. Mercury in Hair and Nails of Dental Personnel. *J Dent Res* 66(Spec. Iss):112, Abst. No. 43, 1987.

8. Osborne, J.W. Dental Amalgam and Mercury Vapour Release. *Adv Dent Res* 6:135-138, 1992.

9. Wirz, J., Ivanovic, D. and Schmidli, F. Mercury Loading from Amalgam Fillings. *Schweiz-Monatsschr-Zahnmed* 100:1292-1298, 1990.

10. Enwonwu, C.O. Potential Health Hazard of the Use of Mercury in Dentistry: Critical Review of the Literature. *Environmental Research*, 42:257-274, 1987.

11. Muller-Fahlbush, H. and Wöhning, T. Psychosomatische Untersuchung der mit Amalgamfüllungen in Verbindung Gebrachten Beschwerden. *Dtsch Zahnärztl Z* 38:665-669, 1983.

12. Jorgensen, K.D. The Mechanisms of Marginal Fracture of Amalgam Fillings. *Acta Odont Scand* 23:347-389, 1965.

13. Sarkar, N.K. and Greener, E.H. Saline Corrosion of Conventional Dental Amalgams. *J Oral Rehab* 2:49-62, 1975.

14. Holland, G.A. and Asgar, K. Some Effects on Phases of Amalgam Induced by Corrosion. *J Dent Res* 53:1245-1254, 1974.

15. Sutow, E.J., Jones, D.W. and Hall, G.C. Correlation of Dental Amalgam Crevice Corrosion with Clinical Ratings. *J Dent Res* 68:82-88, 1989.

16. Mahler, D. Dental Amalgam. In: *Dental Materials Review*, R. Craig, ed. University of Michigan, p.p. 17-28, 1977.

17. Innes, D.B.K. and Youdelis, W.V. Dispersion Strengthened Amalgams. *J Canad Dent Assoc* 29:587-593, 1963.

18. Kostial, K., Kello, D., Jugo, S. et al. Influence of age on Metal Metabolism and Toxicity. *Environ Health Perspect* 25:81-86, 1978.

19. Daston, G.P., Kavlock, R.J., Rogers, E.H. et al. Toxicity of Mercuric Chloride to the Developing Rat Kidney. I. Postnatal Ontogeny of Renal Sensitivity. *Toxicol appl Pharmacol* 71:24-41, 1983.

20. WHO, IPSC, Environmental Health Criteria 118, Inorganic Mercury, 1991.

21. Vimy, M.J., Boyd, N.D., Hooper, D.E. et al. Glomerular Filtration Impairment by Mercury Release from Dental Silver Fillings in Sheep. *Abstract Physiologist* 33:A-94, 1990.

22. Malvin, R. Presentation to FDA dental products panel, March 15th 1991. (Quoted by Osborne, J.W., 1992), 1991.

23. WHO. Recommended health-based limits in occupational exposure to heavy metals. Report of a WHO Study Group, Geneva, World Health Organization (WHO Technical Report Series, No. 647), 1980.

24. Wannag, A. and Skjæraasen, J. Mercury Accumulation in Placenta and Fetal Membrane: A Study of Dental Workers and their Babies. *Environ Physiol Biochem* 5:348-352, 1975.

25. Sikorski, R., Juszkievicz, T. and Szprengier-Juszkiewicz, T. Women in Dental Surgeries: Reproductive Hazards in Occupational Exposure to Metallic Mercury. *Int Arch*

Occup Environ Health, 59:551-557, 1987.

26. Brodsky, J.B., Cohen, E.L., Whitche, C. et al. Occupational Exposure to Mercury in Dentistry and Pregnancy Outcome. *JADA* 111:779-780, 1985.

27. Ericson, A. and Källén, B. Pregnancy Outcome in Women Working as Dentists, Dental Assistants or Dental Technicians. *Int Arch Occup Environ Health* 61:329-333, 1989.

28. Heidam, L.Z. Spontaneous Abortions Among Dental Assistants, Factory Workers, Painters, and Gardening Workers: A Follow up Study. *J Epidemiol Community Health* 38:149-155, 1984.

29. Dixon, R.L. Toxic Responses of the Reproductive System. In: *Toxicology-the Basic Science of Poisons*. 3rd. ed., New York, Klassen, C.D., Amdur, M.O., and Doull, J., Eds., Macmillan, p.p. 432-477 (Chap. 16), 1986.

30. McHugh, W.D. Statement: Effects and Side-Effects of Dental Restorative Materials. *Adv Dent Res* 6:139-144, 1992.

31. Hansard, 23rd July, Written Answers page 310, 1986.

32. Berg, W., Johnels, A., Sjostrand, B., et al. Mercury Content in Feathers, Swedish Birds from the Past 100 years. *Oikos* 17:71-83, 1966.

33. Larsson, J.E. Environmental Mercury Research in Sweden. Swedish Environmental Protection Board, Stockholm, p. 44, 1970.

34. Mjor, I.A. Long term cost of restorative therapy using different materials. *Scand J Dent Res* 100(1):60-65, 1992.

35. EPA. Characterization of Products Containing Mercury in Municipal Solid Waste in the United States, 1970 to 2000. National Technical Information Service, EPA report, March 1992.

36. Rivola, J., Krejci, I., Imfeld, T., et al. Cre-mation and Environmental Mercury Burden. *Schweiz-Monatsschr-Zahnmed* 100:1299-1303, 1990.

37. Wilson, A.B. Effects of Physical Form, Route, and Species, in Experimental Toxicology, the basic issues, D. Anderson and D. M. Conning, Eds. *Royal Soc Chem* p.p. 4-22, 1990.

38. Illing, H.P. Extrapolating from toxicity data to occupational exposure limits: some considerations. *Ann Occup Hyg* 35(6):569-580, 1991.

39. Bailey, K. Physiological Factors Affecting Drug Toxicity. *Regulat Toxicol Pharmacol* 3:389-398, 1983.

40. Brown, S.L. Quantitative Risk Assessment of Environmental Hazards. *Annu Rev Public Health* 6:247-267, 1985.

41. Dixon, R.L. Extrapolation of Laboratory Toxicity Data to Man: Factors influencing the Dose-Toxic Response relationships, Fed. Proc. 39, 53, 1980.

42. Clarkson, T. W. Principles of Risk Assessment. *Adv Dent Res* 6:22-27, 1992.

43. Abraham, J.E., Svare, C.W. and Frank, C.W. The Effect of Dental Amalgam Restorations on Blood Mercury Levels. *J Dent Res* 63:71-73, 1984.

44. Berglund, A. Estimation by a 24-hour Study of the Daily Dose of Intra-Oral Mercury Vapour Inhaled After Release from Dental Amalgam. *J Dent Res* 69:1646-1651, 1990.

45. Vimy, M.J. and Lorscheider, F.L. Serial

Measurements of IntraOral Air Mercury; Estimation of Daily Dose from Dental Amalgam. *J Dent Res* 66:1289-1291, 1985.

46. Mackert, J.R., Factors Affecting Estimations of Dental Amalgam Mercury Exposure from Measurements of Mercury Vapour Levels in Intra-Oral and Expired Air. *J Dent Res* 66:1775-1780, 1987.

47. Olsson, S., and Bergman, M. Letter to Editor, *J Dent Res* 66:1288-1289, 1987.

48. Berglund, A., Pohl, L., Olsson, S., and Bergman, M. Determination of the Rate of Release of Intra-Oral Mercury Vapour from Amalgam. *J Dent Res* 67:1235-1242, 1988.

49. Olsson, S., Berglund, A., Pohl, L., et al. Model of Mercury Vapour Transport from Amalgam Restorations in the Oral Cavity. *J Dent Res* 68:504-508, 1989.

50. Conning, D.M. Introduction to Experimental Toxicology. In: *Experimental Toxicology, the basic issues*, D. Anderson and D. M. Conning, Eds., Royal Soc. Chem. p.p. 1-3, 1990.

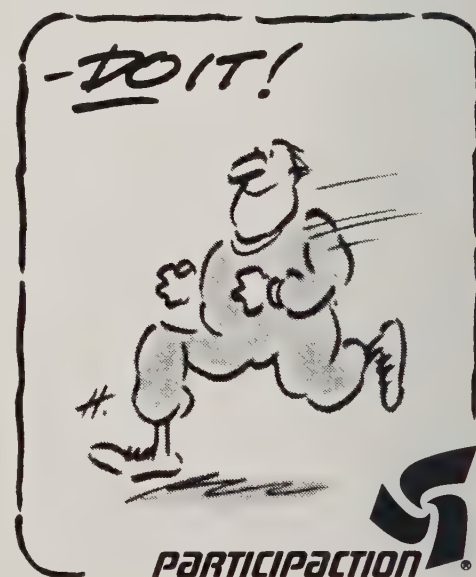
51. Clayton, G.D. and Clayton, F.E. Patty's Industrial Hygiene and Toxicology Vol. 2a and 2b, Wiley, Interscience, New York, 1981.

52. Stanley, H.R. Biological evaluation of dental materials. *Int Dent J* 42(1):37-46, 1992.

53. Swedish National Board of Health and Welfare, Excerpt of a Report September (1992). "Possibilities for Discontinuing the Use of Amalgam as a Tooth Filling Material." *Mojligheter Att Avveckla amalgam Som Tandfyllningsmaterial*, Expertrapport från Socialstyrelsen med anledning av särskilt regeringsuppdrag, Ds 1992:95. Report especially commissioned by the Swedish government.

54. Swedish Medical Research Council (1992), Potential Biological Consequences of Mercury Released from Amalgam. A State of the Art Document. Report of a State of the Art Conference in Stockholm, April 9-10, 1992.

55. Gore S.M., Jones I.G. and Rytter E.C. Misuse of Statistical Methods: Critical Assessment of Articles in BMJ from January to March 1976. *Br Med J* pp. 85-87, 1977.



Application of Porcelain Veneers Following Orthodontic Treatment

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(Introduction by R.E. Jordan, DDS, MSD, and M. Suzuki, DMD, MS)

Introduction

Bonded porcelain veneer restorations have undergone intensive long-term clinical research at both the University of Western Ontario and, more recently, the University of Manitoba. Eight-year clinical recall observations demonstrate a success rate of between 95 and 97 per cent.

Bonded porcelain veneer restorations have four major clinical advantages:

1. They are highly esthetic.
2. The bonded porcelain veneer restoration is ultra-conservative relative to the sacrifice of calcified tooth structure.
3. The gingival tissue response to such restorations is excellent.
4. Bonded porcelain veneer restorations are extremely durable and fracture resistant since they are bonded to the tooth structure by means of a virtually indestructible micromechanical bond.

This very interesting paper documents an additional major indication for porcelain veneer restorations, other than esthetics, which is conservative treatment after orthodontic relapse.

ABSTRACT

To date, porcelain laminate veneers have been used primarily to solve esthetic problems. As bonding materials and veneer restoration techniques have improved, however, functional demand has now been accepted. Porcelain laminate veneers have been applied to compensate for the limitations of orthodontic treatment. In order to allow optimum functional movement of the mandible, anterior and lateral guidances are required in the maxillary dentition. These guidances provide pathways for the opposing mandibular teeth. Anterior and

canine guidances have been established by means of veneer placement, and no broken restorations have been observed in the past four years. When diastema spaces have recurred subsequent to orthodontic space closure, they have been restored with porcelain veneers so effectively that no relapse has been observed.

This paper also examines instances where small lateral incisors have caused a discrepancy in the tooth size ratio between the upper and lower arches. Porcelain veneers were placed to harmonize the tooth size and to stabilize the occlusion.

Relapse sometimes occurs after orthodontic tooth alignment. Over correction, therefore, is usually applied for rotated teeth, anterior deep or open bite, and Class II or III molar relationships. Some malocclusions, however, cannot be over corrected. For example, the spacing between the teeth, such as diastema, can easily reopen because it is impossible to apply over correction once space closure has been achieved. The same is true of lateral open bites, because occlusal contact cannot be corrected properly. In these cases, the patient must wear a retainer for longer than usual, and/or permanent splints must be used to stabilize the occlusion. Another causal factor of relapse is dysfunctional occlusion. It is difficult to achieve functional occlusion if the tooth size ratio is not well matched. This occurs most frequently when the patient's maxillary lateral incisors are small. Porcelain crowns or composite resin restorations are sometimes applied to compensate for the problem. Clinicians began to use this method after porcelain laminate veneer restorations were introduced in the early 1980s.^{1,2} Since then, clinical evaluations^{3,4} have proved that this type of restoration can be applied in various

cases, including functionally loaded teeth such as canines. Porcelain veneers have also been reported to be highly acceptable for the closure of diastema spaces.⁴⁻⁶ The application of porcelain veneers following orthodontic treatment has been highly successful in compensating for post orthodontic treatment relapse.

Four cases involving the use of porcelain laminate veneer restorations to correct orthodontic problems are presented in this paper.

Case One

A seven-year-old patient with a unilateral cleft lip and palate presented with missing maxillary lateral incisors (Fig. 1a). Orthodontic treatment was performed, and the patient had an esthetic and functionally good occlusion at 15 years of age (Fig. 1b). Relapse occurred gradually during the retention period, however. By 21 years of age, the patient's maxillary left canine was intruded and lateral guidance was absent (Fig. 1c). Since no other occlusal change had been observed, a final porcelain veneer restoration was placed. No orthodontic tooth movement was performed on the patient (Fig. 1d). Three years have passed since the porcelain veneer was bonded on the canine. Failure or relapse has not been observed.

Case Two

A 17-year-old unilateral cleft lip and palate patient presented with a missing maxillary left lateral incisor and a hypoplastic maxillary left central incisor (Fig. 2a). A treatment plan was developed, and the lateral incisor was replaced with a pontic. Fig. 2b shows the occlusion at the end of orthodontic treatment. A final restoration was designed following orthodontic tooth movement. Three years have passed

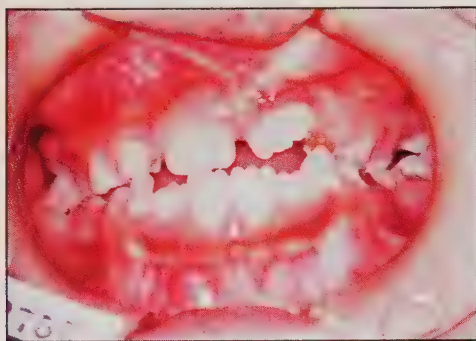


Fig. 1a: A seven-year-old patient with unilateral cleft lip and palate.



Fig. 1b: The patient at 15 years of age, following orthodontic treatment.

since a porcelain veneer bridge was bonded on teeth 21, 22, and 23 (Fig. 2c). No failure or relapse has occurred.

Case Three

An anterior cross bite was the chief complaint of another patient (Fig. 3a). This patient's lower right lateral incisor was missing. Four premolars were extracted and orthodontic tooth alignment was completed. A space between the mandibular right canine and lateral incisor was reopened during the retention period (Fig. 3b). The mandibular right canine was therefore prepared for a porcelain laminate veneer (Fig. 3c), and the reopened space was closed (Fig. 3d). The overall esthetic improvement is shown in Fig. 3e.

Case Four

A 49-year-old patient had a midline diastema with associated periodontitis. He also had a tooth size discrepancy, which was caused by small lateral incisors in the maxillary arch (Fig. 4a). When orthodontic treatment was finished, small spaces remained between teeth 22, 23, 11 and 12 (Fig. 4b). Temporary composite restorations were placed just after the orthodontic treatment. During the retention period, however, the diastema recurred (Fig. 4c). Porcelain laminate veneer restorations



Fig. 1c: The patient at 21 years of age. Note the intruded maxillary left canine and the absence of lateral guidance.



Fig. 1d: The patient after placement of a final porcelain veneer restoration.

were bonded on teeth 11 and 21 (Fig. 4d).

Case Five

This patient had peg lateral incisors in the maxillary arch (Fig. 5a). Open coils were inserted to create spaces (Fig. 5b), and porcelain laminate veneers were subsequently bonded to the anterior teeth (Fig. 5c).

Discussion

One of the major goals in orthodontics is to achieve esthetic dental arches without restorations. Until recently, post-orthodontic relapse had always disappointed orthodontists. The development of porcelain laminate veneers has solved this problem, however.

Porcelain veneer placement is indicated for both esthetic reasons and for the patient's overall oral health and function, as it leaves the functional lingual surfaces of the upper incisors untouched. These surfaces are critical for the anterior guidance of mandibular movement. They usually show occlusal wear as people age, which, in most cases, allows total occlusal harmony to be maintained throughout an individual's lifetime without temporomandibular disorders. On the other hand, conventional porcelain jacket crowns have porcelain and/or metal lin-



Fig. 2a: A 17-year-old patient with a unilateral cleft lip and palate, a missing maxillary left lateral incisor and a hypoplastic maxillary left central incisor.



Fig. 2b: The patient at the conclusion of orthodontic treatment.



Fig. 2c: The patient following orthodontic tooth movement, and three years after a porcelain veneer bridge was bonded on teeth 21, 22, and 23.

gual surfaces that are so hard that opposing teeth sometimes show either wear or mandibular repositioning. Accordingly, it can be said that porcelain veneers in the maxillary incisors are "body harmonious" as well as esthetic dental restorations.

Another indication for the porcelain veneer restoration is the prevention or restoration of diastema spaces. Contraindications of porcelain veneers involve extensive breakdown or overly-restored teeth, intensely-stained endodontically-treated teeth, teeth subject to bruxing or parafunctional activity, malpositioned teeth, and huge spaces or diastema.



Fig. 3a: A patient suffering from anterior cross bite.

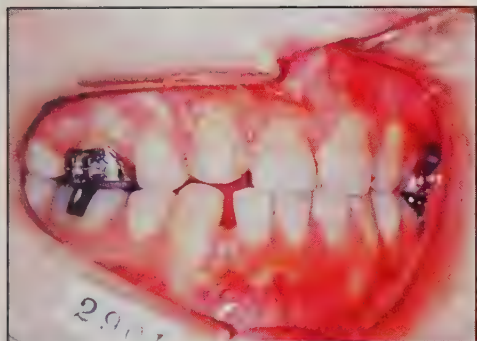


Fig. 3b: The patient after orthodontic treatment. Note the space that was reopened between the mandibular right canine and the lateral incisor during the retention period.



Fig. 3c: The patient's mandibular right canine following preparation for the placement of a porcelain veneer restoration.

We have placed a pontic between two porcelain veneers, and it has not fractured. The tissue response for porcelain veneers is excellent, and the finished surface looks like a natural tooth. Veneers also exhibit natural fluorescence and absorb, reflect and transmit light.⁵

In case one, the cusp tip of the maxillary canine was covered with porcelain, which is strong enough to resist occlusal force without fracture. The same situation is observed in lower incisors, which receive a high degree of occlusal force from the maxillary incisors. Accordingly, the incisal edges should be covered with porcelain.



Fig. 3d: The reopened space is closed with a porcelain laminate veneer.



Fig. 3e: A marked esthetic improvement was achieved.



Fig. 4a: A patient affected by a midline diastema with associated periodontitis. Note the tooth size discrepancy caused by small lateral incisors in the maxillary arch.

Conclusion

Porcelain laminate veneers, applied following orthodontic treatment, constitute a highly acceptable, conservative treatment modality. ■

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Fig. 4b: The patient at the conclusion of orthodontic treatment. Note the spaces remaining between teeth 22, 23, 11, and 12.



Fig. 4c: The patient's diastema recurred during the retention period.



Fig. 4d: Porcelain laminate veneer restorations were bonded on teeth 11 and 21 to correct the diastema.

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References

1. Calamia, J.R. Etched Porcelain Veneers. A New Treatment Modality Based on Scientific and Clinical Evidence. *N.Y. Dent J* 53:255-259, 1983.
2. Horn, H.R. A New Lamination, Porcelain Bonded to Enamel. *N.Y. Dent J* 49:401-403, 1983.
3. Jordan, R.E., Suzuki, M. and Senda, A. Four Year Recall Evaluation of Labial Porcelain



Fig. 5a: A patient with peg lateral incisors in the maxillary arch.



Fig. 5b: Open coils were inserted to create spaces.



Fig. 5c: Porcelain laminate veneers were bonded to the anterior teeth.

Veneer Restorations. *J Dent Res* 68:249, #544, 1989.

4. Strassler, H.E. and Nathanson, D. Clinical Evaluation of Etched Porcelain Veneers Over a Period of 18 to 42 Months. *J Esth Dent* 1:21-28, 1989.

5. Nasedkin, J.N. Current Perspectives on Esthetic Restorative Dentistry. Part I: Porcelain Laminates. *J Canad Dent Assoc* 54:248-255, 1988.

6. Jordan, R.E. *Esthetic Composing Bonding - Techniques and Materials*. B.C. Decker Inc., Toronto, *Philadelphia, 1988.



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References:

1. Yang Mao, Canadian pediatric asthma: morbidity, mortality and hospitalization data. MES Medical Education Services (Canada) Inc.
2. Georgetown Symposium on Analgesics: Arch. Intern. Med. 141: 273-406, 1981.
3. Bradley et al. Ibuprofen vs. Acetaminophen for Knee Osteoarthritis. The New England Journal of Medicine. Vol. 325 No. 2, 1991.

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Caries Prevalence In Xerostomic Individuals

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ABSTRACT

Saliva, via its lubricating, cleansing, remineralizing, antibacterial, and buffering actions, is an important protective factor for both dentition and soft tissue. Xerostomia is commonly found in older individuals due to the use of medications or medical conditions, such as Sjögren's, which directly affect salivary gland function. A xerostomic subgroup ($n = 60$), mean age = 60, 66 per cent female) of the Nutrition and Oral Health Study ($n = 370$) was reexamined for caries. Unstimulated and two-per-cent citric-acid stimulated parotid and submandibular/sublingual salivary flow rates were determined. This group was matched for number of teeth, age, sex, and alcohol and smoking habits with a medication-free subgroup ($n = 60$). Active root and coronal caries were found to be significantly higher in the xerostomic subgroup than in a matched subgroup of medication-free individuals. The mean DFS for the xerostomic subgroup was 45.4 ± 21.7 for coronal caries and 5.3 ± 5.8 for root caries. The mean number of teeth was 21.8. The mean DFS in the medication-free subgroup was 36.5 ± 22.1 for coronal caries and 3.2 ± 3.2 for root caries. The mean DFS in the xerostomic subgroup for coronal and root caries was statistically significantly higher ($p < 0.05$). The odds ratio was 2.89 for coronal caries and 3.27 for root caries in the xerostomic versus the medication-free subgroup. Caries varied inversely with salivary flow rate. The difference in flow rates for those in the lowest and highest quartile for coronal caries experience (DFS) in the xerostomic subgroup was found to be statistically significant ($p < 0.05$). These results demonstrate that individuals with xerostomia are at greater risk for caries.

SOMMAIRE

Par ses propriétés lubrifiantes, net-

toyantes, reminéralisantes et antibactériennes ainsi que par son action tampon, la salive joue un rôle important dans la protection des dents et des tissus mous de la bouche. Se retrouvant communément chez les personnes âgées, la xérostomie est due aux médicaments qu'elles consomment ou à des maladies qui, tel le syndrome de Sjögren, affectent directement les glandes salivaires.

Au cours d'une étude sur l'alimentation et la santé dentaire, on a réexaminé un sous-groupe de personnes affligées de xérostomie dont l'âge moyen était 60 ans et qui comptait 66 p. cent de femmes afin de voir si ces personnes avaient des caries. On a calculé le taux de leur flux salivaire à la parotide, sous la mandibule et sous la langue lorsqu'il n'était stimulé par aucun agent et lorsqu'il l'était par une solution comprenant 2 p. cent d'acide citrique. Suivant le nombre de dents, l'âge, le sexe et les habitudes touchant la consommation de tabac et d'alcool, on a apparié ce premier groupe à un second qui ne prenait aucun médicament. On a découvert que, dans le premier, les caries radiculaires et coronaires étaient beaucoup plus nombreuses que dans le second. Chez les personnes du premier qui avaient en moyenne 21,8 dents, la moyenne était de $45,4 \pm 21,7$ pour les caries coronaires et de $5,3 \pm 5,8$ pour les caries radiculaires. Chez celles du second, la moyenne était de $36,5 \pm 22,1$ pour les caries coronaires et de $3,2 \pm 3,2$ pour les caries radiculaires. Dans le premier groupe, la moyenne était donc beaucoup plus élevée tant pour les caries radiculaires que pour les caries coronaires ($p < 0.05$). Relativement au second groupe, le rapport était de 2,89 pour les caries radiculaires et de 3,27 pour les caries coronaires. En fait, les caries variaient inversement au taux du flux salivaire. Dans le premier groupe, celui des personnes souffrant de xérostomie, on a noté, compte tenu des caries coronaires, une différence statistiquement plus importante ($p < 0.05$)

dans le taux du flux salivaire entre les personnes du quartile inférieur et celles du quartile supérieur. Aussi ces résultats démontrent-ils que les personnes souffrant de xérostomie sont-elles plus sujettes à avoir des caries.

Introduction

Saliva, via its lubricating, cleansing, remineralizing, antibacterial, and buffering actions, is an important protective factor for both dentition and soft tissue. Xerostomia, or decreased salivary flow, is commonly found in older individuals. Although aging per se does not affect salivary gland function, the incidence of medical conditions that directly or indirectly influence glandular activity does increase with age.¹⁻¹¹

Surveys of ambulatory elderly individuals show that 60 to 68 per cent of men and 68 to 78 per cent of women use prescription medication.¹² Over \$40 billion was spent on medication¹³ in the United States last year, of which 35 per cent was spent by the elderly.¹⁴ Cardiovascular and psychotropic medications are most frequently prescribed for the elderly, as well as analgesics and laxatives.^{12,15}

It has been shown, in both human and animal studies, that medications affect the flow and composition of saliva. Over 375 medications have been associated with decreased salivary flow.¹⁶ Since adequate salivary flow is essential to the health of the oral structures as well as to digestion of food, it is important to understand the causes, consequences, symptoms, and treatment of xerostomia. For example, decreased salivary flow, as well as changes in the composition of saliva, have been associated with an increased prevalence of both coronal and root caries in the elderly.¹⁷⁻²³

Periodontal disease, mucositis, angular cheilitis, disturbed oral sensation and taste, speech dysfunction, altered nutritional intake and difficulty with

deglutition have been associated with hypofunction.^{19,23} Increased quantities of bacteria and fungi in the mouth due to the loss of saliva's antibacterial activity, along with the loss of its lubrication, remineralization and buffering actions, all cause these changes.⁹

Emotions, particularly those under the sympathetic-nervous system (fear or anxiety), neuroses, organic brain disorders, and drug therapy have all been known to produce xerostomia. The condition can be caused by changes in the acinar cells' production of salivary fluid and electrolytes, alteration of the salivary ducts, perturbed exocrine protein synthesis and release, and altered neurological, hormonal or cognitive function. Some of the main groups of xerostomic-inducing medications are antihypertensives, antihistamines, anticonvulsants, antiparkinsonian drugs, antipsychotics, antidepressants, and tranquilizers. In addition, saliva gland function may be diminished by the obstruction of the duct with a sialolith or by infections such as mumps. Also implicated are autoimmune disorders, such as Sjögren's syndrome, rheumatoid arthritis, systemic lupus erythematosus, Crohn's disease, primary biliary cirrhosis, polymyositis or dermatomyositis, graft versus host diseases, sarcoid, and autoimmune hemolytic anemia.^{9,21,22}

Patients suffering from Sjögren's syndrome face a number of problems. Along with xerostomia, Sjögren's syndrome may affect all the glands in the body, but the full-blown disease may not have shown itself except in the mouth.^{21,22} The treatment of chronic xerostomia is often palliative, and because of its complexity no single therapy has been identified.

Fifteen per cent of the independent elderly and 25 per cent of those residing in nursing-homes suffer from depression. Twenty-five per cent of all suicides are committed by the elderly. Amitriptyline and Desipramine are tricyclic antidepressants used in the treatment of endogenous depression. One of the side effects related to the anticholinergic properties of these drugs is a decrease in salivary flow. This is thought to be associated with an increased rate of dental caries and other oral diseases.²⁴⁻³⁴ Amitriptyline has approximately 10 times the affinity for muscarinic acetylcholine receptors than does desipramine.¹⁵ Classically, it is believed that the secretion of water and electrolytes in the parotid salivary glands is

TABLE I

Distribution of Subjects In Xerostomic and Control Groups By Number of Teeth, Tobacco Use, and Alcohol Use

Status	Xerostomic		Control	
	Yes	No	Yes	No
Mean Number of Teeth	21.9 ±	4.9	22.6 ±	5.8
Tobacco Use	9	51	9	51
Alcohol Use	29	31	37	23

regulated by both cholinergic muscarinic receptors and adrenergic receptors.³⁵ Tricyclic antidepressants possess both adrenergic and serotonergic effects in addition to their anticholinergic activity.²¹ Therefore, these agents may cause changes in the composition of saliva as well as decreased salivary flow. Several studies have examined the decrease in salivary flow following treatment with tricyclic antidepressants, but information about possible qualitative changes in saliva composition is lacking. Both Imipramine and Zimelidine have been found to decrease salivary flow and change salivary composition.³⁰

Although there have been references to the fact that salivary hypofunction is caused by medication, no direct documentation of the sequelae of this salivary hypofunction in an aging population was available. This study provides the evidence for the relationship between salivary flow and caries in the elderly population.

Methods

A nutrition and oral health study was conducted on 370 middle-aged and elderly Greater Boston residents.³⁶ Volunteers were selected from two ongoing studies (the Nutritional Status Survey (NSS) and Forsyth Root Caries Study (FRCS)) and from 30 inner-city sites (in order to increase minority participation). Selection criteria included being in a community dwelling, the presence of six or more teeth, overall health (i.e., free of any terminal, wasting illness, endocrine disease affecting nutrition, recent unexplained weight loss, or active alcoholism) and the ability to successfully maintain a three-day food diary. Each participant understood the study requirements and signed an informed consent form. The participants were mostly Caucasian (members of minority groups accounted for 11 per cent), 59 per cent female and 85 per cent had at least 12 years of school education

(36 per cent had completed college or higher). Eighty-five per cent had attended the dentist within the last year. From this population of 370 middle-aged and elderly individuals, two groups were drawn and matched for age, sex, number of teeth and smoking habits:

1. Xerostomic Group: Individuals who claimed to have a "dry mouth" – based on an administered dental attitudinal questionnaire on health knowledge, behavior and practice – and who were further found by the dental examiner to have inadequate saliva. These individuals were classified into two groups:

a) those diagnosed with Sjögren's syndrome, and, b) those who had medication-induced xerostomia.

2. Medication-Free Group: This group did not report having a "dry mouth." They were judged by the dental examiner to have adequate saliva and did not take any prescription or over-the-counter medication on a regular basis.

Table I shows the distribution of smoking and alcohol use, as well as the mean number of teeth, for each of the two groups.

A clinical oral examination of each subject was conducted in a Tufts dental clinic by one examiner, using artificial light, explorer, mirror and air syringe. Each subject's teeth were dried before examination, but no radiographs were taken to assess the dental decay. Coronal and root caries examinations were made according to the diagnostic criteria used in the U.S. Adult Survey (U.S. Department of Health and Human Services, 1987). Third molars were excluded from examination. Training and calibration sessions for caries were held semi-annually with the examiner from the FRCS.

Salivary evaluation of the individuals in the xerostomic group was carried out according to the methods reported

TABLE II
Disrtibution of Subjects in Xerostomic Group by Sex and Diagnosis

Sex	Medication	Diagnosis Sjögren's Syndrome
Male	19	2
Female	22	17
Total	41	19

by Fox et al.⁹ Morning collections were scheduled to avoid diurnal variation, and the subjects were instructed to refrain from eating, drinking, gum chewing, and candy sucking for two hours prior to the collection. Parotid saliva was collected using a modified Carlson-Crittenden cup. Submandibular/sublingual saliva was collected using individually bent 250 L pipettes attached to a 2.0 mL test tube with suction. The suction was delivered by a Drummond Scientific Pipette-Aid. Saliva was first collected from the unstimulated parotid glands for 10 minutes, then saliva from the unstimulated submandibular/sublingual glands was collected for two minutes. Since there can be marked variations in the concentration of several electrolytes during the first 1.5 minutes after stimulation with two-percent citric acid has begun, saliva collected during the first two minutes was discarded. Stimulated saliva was then collected. All saliva samples were collected into closed containers with minimal excess space to avoid a loss in carbon dioxide levels and subsequent increases in pH. Samples were kept at 0° C in ice until they were received in the laboratory, where flow rate and pH were measured immediately.

Results

The parent study of 370 subjects had a mean DFS of 36.0 ± 20.64 for coronal caries and 5.15 ± 5.30 for root caries.³⁶ In order to reduce conflicting variables, a medication-free group matched for age, sex, alcohol consumption and smoking, and number of teeth was chosen from the parent study to compare to the xerostomic group. **Table I** shows the distribution of subjects in the xerostomic and control groups by smoking, alcohol use and number of teeth. **Table II** shows the distribution of subjects in the xerostomic group by diagnosis and sex. As can be seen, the total number of teeth is not statistically different in the

two groups throughout the age groups. **Table III** shows the coronal caries prevalence for the xerostomic group. The caries rate is significantly higher for the whole group, p = .02 (Student T test). **Table IV** shows the decayed and filled root surfaces for the xerostomic and control groups for all three age groups and the total. In the 60-plus groups, the active decay (decayed and recurrent decay) was more than three times higher (1.75 versus 0.46) in the xerostomic group than in the control group. The number of teeth were the same in both groups. In all age groups, the DFS in the xerostomic group was higher than in the control group and was significantly higher in the 60-plus group. **Table V** shows the decayed and filled coronal surfaces for the xerostomic and control groups for the three age groups

TABLE III
Decayed and Filled Coronal Surfaces For Xerostomic and Control Groups by Age

Age Group		Xerostomic		Mean	STD
		Mean	STD		
30-44 (n=20)	D+R	1.0	1.2	2.62	5.9
	DFS	41.7	18.3	19.6	11.6
	Teeth	23.9	4.4	25.8	2.12
45-59 (n=25)	D+R	.89	1.5	1.1	1.9
	DFS	59.6	21.8	42.9	23.6
	Teeth	24.1	5.0	24.4	4.5
60+ (n=75)	D+R	1.75	5.7	.46	1.0
	DFS	43.2	21.0	37.4	20.6
	Teeth	20.8	4.8	20.9	6.3
All	D+R	1.49	4.7	.92	7.8
	DFS	45.4	21.7	36.5	22.1

and the total. The active decay is significantly higher in all age groups (three times higher). The number of teeth was the same in both groups. When the percentage of subjects having coronal decay was examined (**Table V**), 47 per cent of the xerostomic group had root decay versus 28 per cent of the control group. The Chi square was 3.56, df = 1.0, p > .05 (0.07). When the 60-plus subjects in the xerostomic group were examined (**Table VI**), 50 per cent had coronal caries versus 26 per cent of the control group, for a Chi square of 3.67, df = 1.0, p > .05 (0.07). Similarly, when the percentage of all subjects having root caries was examined (**Table VII**), 45 per cent had root decay versus 20 per cent of the control (Chi square = 7.45, df = 1.0, p < 0.01). When the 60-plus subjects were examined for root caries (**Table VIII**), 50 per cent had root caries versus 20 per cent of the control group (Chi square = 4.28, df = 1.0, p < 0.05 (0.04)). The difference in flow rates for those in the lowest and highest quartile for coronal caries experience (DFS) in the xerostomic subgroup (n=60) was found to be statistically significant (p < 0.05). Caries was inversely correlated with salivary flow. The correlation coefficient was 0.35 for coronal caries and 0.27 for root caries. As expected, there was great variability in flow rates. This can explain the coefficients that were observed between caries rates and flow rates. Salivary flow rates for unstimulated

TABLE IV**Decayed and Filled Root Services for Xerostomic and Control Groups by Age**

Age Group		Xerostomic		Control	
		Mean	STD	Mean	STD
30-44 (n=20)	D+R	1.18	3.6	.33	.7
	DFS	2.5	6.0	1.1	1.7
	Teeth	23.9	4.4	25.8	6.9
45-59 (n=25)	D+R	1.00	1.1	.31	1.1
	DFS	5.4	5.0	2.9	3.4
	Teeth	24.1	5.0	24.4	4.5
60+ (n=75)	D+R	1.5	2.5	.54	1.3
	DFS	6.2	5.7	3.9	3.2
	Teeth	20.8	4.8	20.9	6.3
All	D+R	1.40	2.6	.45	1.1
	DFS	5.3	5.8	3.2	3.2

and stimulated parotid and submandibular/sublingual glands were measured for all the xerostomic subjects and recorded on Table IX. The flows represent the samples taken from both ducts for both parotid and submandibular/sublingual saliva. As can be seen, the Sjögren's syndrome subjects had a much lower flow rate than those whose xerostomia was drug induced (Table X). Those on antihistamines and anti-hypertensives had the least reduction of flow. Those on antidepressant medication had an intermediate flow and those on antipsychotic medications had the greatest reduction (see Tables XI and XII). This finding is important, since many of the antipsychotic and antidepressants are titrated by the patient's response to dry mouth.

Discussion

Kitamura et al¹⁸ found that medication use was most predictive of maxillary root caries. They compared individuals using xerostomic medications with those who did not use xerostomic drugs, and a significant difference between these two groups was noted. The mean root caries index was 23 for the xerostomic subjects and seven for the non-xerostomic subjects.

The subjects used for this study were health conscious, educated, and high utilizers of dental services. Despite this, the xerostomic subgroup had approximately three times the caries prevalence

of the matched medication-free subgroup. Approximately half of the xerostomic group had active caries, which was a significantly higher odds ratio than the medication-free subgroup. This indicated that individuals taking medications that affect salivary flow, especially elderly people taking multiple medications, are at high risk of devel-

oping both root and coronal caries.

When subjects over 60 were examined, the caries prevalence and rate found in the xerostomic group were significantly higher than they were in the matched medication-free group. Persson et al³⁷ did not find a difference in caries rate in subjects using xerostomic versus non-xerostomic medications, despite a 45 per cent drop in salivary flow rates in those using diuretic or antidepressant medication. The inability to detect differences may be due to the high mean DMFS score of 38 ± 3.7 , and the fact that the control group was smaller (10 subjects) than the xerostomic group (30 subjects).

The caries rates were inversely correlated with salivary flow. Edgar and O'Mullane³⁸ stated that unstimulated flow rate is more important than stimulated flow rate for general oral health. As can be seen, root caries was inversely correlated to the unstimulated saliva, while the submandibular/sublingual flow, which represents the majority of unstimulated flow, was even more highly correlated than unstimulated flow. This substantiated the Kitamura study¹⁸ and indicates that the dental professional has to be vigilant in identifying xerostomia early and in instituting nutritional counselling and preventive treatment with fluorides and other agents, such as remineralizing solutions, artificial saliva, chlorhexidine and/or sialogues.³⁹

TABLE V**Number and Per Cent of Subjects With Coronal Decay in Two Groups (All Ages)**

Coronal Decay	Xerostomic	Control
Yes	28 (47%)	17 (28%)
No	32 (53%)	43 (72%)
Chi Square = 3.56 df=1 p > 0.5 (.07)		
Odds Ratio = 2.21		

Table VI**Number and Per Cent of Subjects With Coronal Decay in Two Groups (Age 60+)**

Coronal Decay	Xerostomic	Control
Yes	20 (50%)	9 (26%)
No	20 (50%)	26 (74%)
Chi Square = 3.67 df=1 p > 0.05 (.07)		
Odds Ratio = 2.89		

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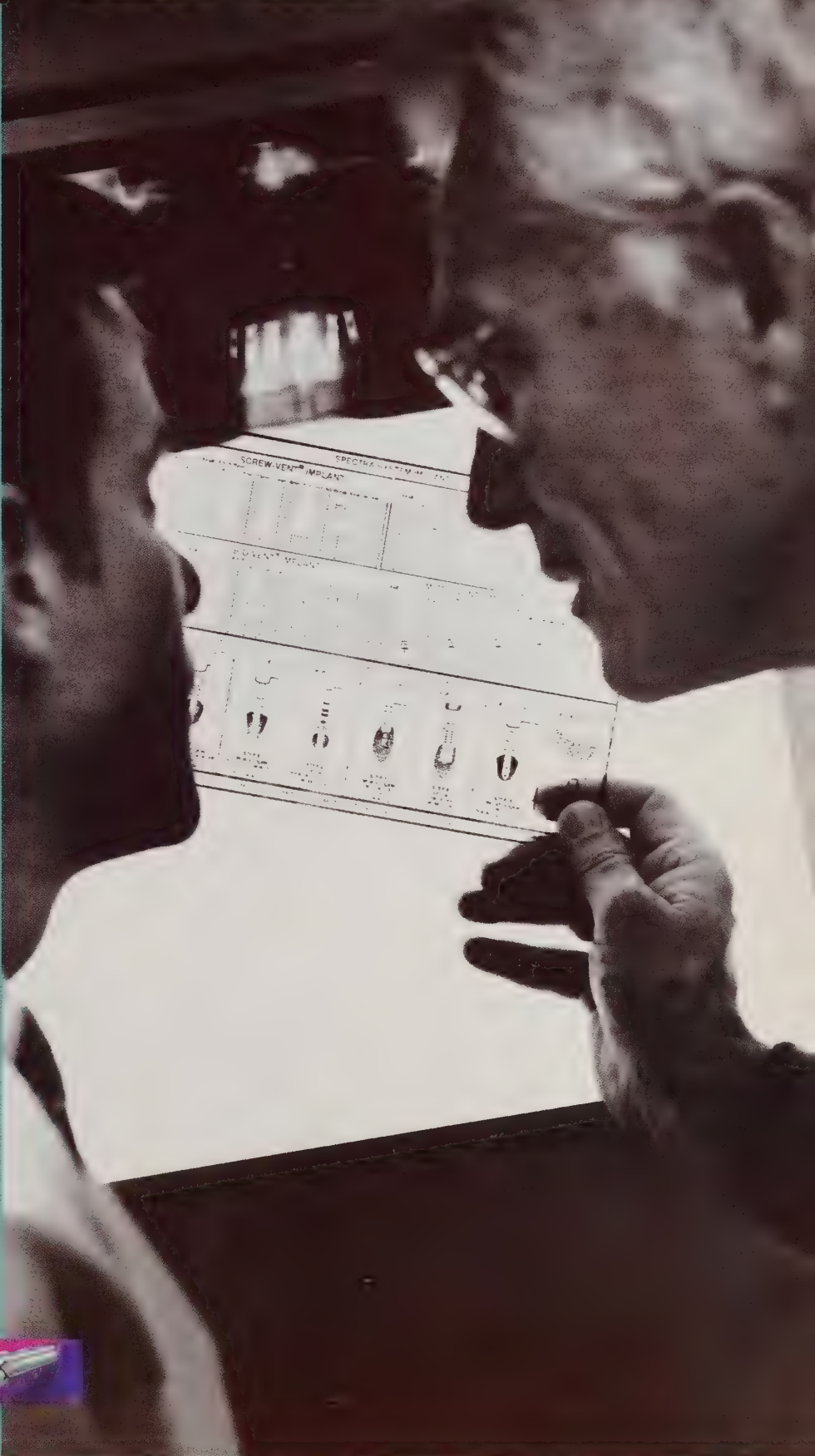
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TABLE VII

Number and Per Cent of Subjects With Root Decay in All Groups (All Ages)

Root Decay	Xerostomic	Control
Yes	27 (45%)	12 (20%)
No	33 (55%)	48 (80%)
Chi Square = 7.45 df=1 p < 0.01		
Odds Ratio = 3.27		

TABLE VIII

Number and Per Cent of Subjects With Root Decay in Two Groups (Age 60+)

Root Decay	Xerostomic	Control
Yes	20 (50%)	8 (20%)
No	20 (50%)	27 (80%)
Chi Square = 4.28 df=1 p < 0.05 (.04)		
Odds Ratio = 3.38		

TABLE IX

Salivary Flow Rates by Gender

	Male (n=21)			Female (n=39)		
Saliva	Mean	STD	Median	Mean	STD	Median
Total Unstimulated	.109	.070	.106	.085	.090	.057
Total Stimulated	.272	.157	.280	.317	.288	.200

TABLE X

Salivary Flow Rates By Diagnosis

	Drug (n=41)			Sjögren's Syndrome (n=19)		
Saliva	Mean	STD	Median	Mean	STD	Median
Total Unstimulated	.108	.087	.096	.062	.069	.055
Total Stimulated	.324	.234	.288	.252	.279	.183

TABLE XI

Medications Affecting Salivary Flow Rate or Composition

HBP	HCTZ	DEP	PSY	RESP	OTHER
Aldomet	Lopres	Clonopin	Haldol	Seldane	Flexeril
Atenol	Naptazane	Elavil	Phenobarbitol	Slophillin	Ibuprofen
Capoten	Vasotec	Pamelor	Stelazine	Theophilline	Indomethacin
Corgard		Prozac			Parlodol
Dyazide		Triavil			Zantac
		Valium			

Conclusions

Active root and coronal caries were found to be significantly higher in the xerostomia subgroup than in a matched subgroup of medication-free individuals. Flow rate differences for those in the lowest and highest quartile for coronal caries experience in the xerostomia subgroup were found to be statistically significant ($p < 0.05$). Caries were inversely correlated with salivary flow. ■

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References

1. Baum, B.J. Evaluation of stimulated parotid saliva flow rate in different age groups. *J Dent Res* 60:1292-1296, 1981.
2. Ship, J.A. and Baum, B.J. Is reduced salivary flow normal in old people? *Lancet* 336:1507, 1990.
3. Helft, M.W. and Baum, B.J. Unstimulated and stimulated parotid salivary flow rate in different age groups. *J Dent Res* 63:1182-1185, 1984.
4. Tylenda, C.A., Ship, J.A., Fox, P.C. et al. Evaluation of submandibular salivary flow rate in different age groups. *J Dent Res* 67:1225-1228, 1988.
5. Chauncey, H.H., Borkan, G.A., Wayler, A.H. et al. Parotid fluid composition in healthy aging males. *Adv Physiol* 28:323-328, 1981.
6. Baum, B.J. Salivary gland fluid secretion during aging. *J Am Geriatr* 37:453-458, 1989.
7. Cherry-Peppers, G., Sorkin, J., Andres, R. et al. Salivary gland function and glucose metabolic status. *J Gerodontol Med Sci*

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TABLE XII

Salivary Flow Rates of Subjects

Diagnosis	Number	Mean Age	UP Flow Rate	US Flow Rate
RESP	4	51.00	.000 ± .000	.125 ± .087
HBP	19	64.16	.007 ± .018	.130 ± .092
DEP	8	57.38	.004 ± .011	.089 ± .082
PSY	4	44.50	.000 ± .000	.025 ± .038
Other	8	59.50	.030 ± .051	.098 ± .081
Sjögren's Syndrome	20	54.75	.007 ± .022	.062 ± .064

47:M130-134, 1992.

8. Ship, J.A., Fox, P.C. and Baum, B.J. How much Saliva is enough? Normal function defined. *JADA* 122:63-69, 1991.

9. Fox, P.C., Van der Ven, P.F., Sonis, B.C. et al. Xerostomia: Evaluation of a symptom with increasing significance. *JADA* 110:519-525, 1985.

10. Ben-Aryeh, Shalev, A., Szargel, R., Laor, A. et al. The salivary flow rate and composition of whole and parotid resting and stimulated saliva in young and old healthy subjects. *Biochem Med Metabol Biol* 36:260-265, 1985.

11. Mandel, I.D. In defense of the oral cavity. In: Kleinberg, I., Ellison, S. and Mandel, I.D. (eds). *Proceedings Saliva and Dental Caries*, Spec. Suppl. Microbiology Abstracts, New York, Information Retrieval, Inc., 1979, pp. 473-491.

12. Chrischilles, E.A., Foley, D.J., Wallace, R.B. et al. Use of medications by persons 65 and over: data from the established populations for epidemiologic studies of the elderly. *J Gerontol Med Sci* 47:M137-144, 1992.

13. La Plana-Simonsen, L. What are pharmacists dispensing most often? *Pharma Times* 58:47-66, 1992.

14. Kasper, J. Prescribed medicines: use expenditures, and sources of payment. National Health Care Expenditures Study Data Preview 9. DHHS Pub. No. (PHS) 82-3320. Public Health Service. Hyattsville, MD: National Center for Health Services Research, 1982.

15. Jenike, M.A. *Geriatric Psychiatry and Psychopharmacology: A Clinical Approach*. Boston, Year Book Medical Publishers, 1989.

16. Sreebny, L.M. and Schwartz, S.S. A reference guide to drugs and dry mouth. *Gerodontology* 5:75-99, 1986.

17. Johansen, E., Papas, A., Fong, W. et al. The remineralization of carious lesions in elderly patients. *Gerodontology* 3:47-50, 1987.

18. Kitamura, M., Kiyak, H.A. and Mulligan, K. Predictors of root caries in the elderly. *Commun Dent Oral Epidemiol* 14:34-38, 1986.

19. Bahn, S.L. Drug-related dental destruction. *Oral Surg* 33:49-54, 1972.

20. Mandel, I.D. Sialochemistry in diseases and clinical situations affecting salivary

glands. *CRC Crit Rev Clin Lab Sci* 12:321-366, 1980.

21. Fox, R.I., Howell, F.V., Bone, R.C. et al. Primary Sjögren's syndrome: Clinical and immunopathologic features. *Semin Arth Rheum* 14:77-105, 1984.

22. Stuchell, R.N., Mandel, I.D. and Baurmash, H. Clinical utilization of sialochemistry in Sjögren's syndrome. *J Oral Path* 13:303-309, 1984.

23. Navazesh, M., Christensen, C. and Brightman, V. Clinical criteria for the diagnosis of salivary gland hypofunction. *J Dent Res* 71:1363-1369, 1992.

24. Diagnosis and Treatment of Depression in Late Life. Reprinted from NIH Consensus Statement NIH Consensus Development Statement, Nov. 4-6:9, 1991.

25. Schmah, S.R. Depression in the geriatric population: Implications for the general practitioner. *Spec Care* 4(1):16-18, 1984.

26. Bassuk, E. and Schoonover, S. Rampant dental caries in the treatment of depression. *J Clin Psych* 39:163-165, 1978.

27. Bertrum, A., Kragh Sorensen, P., Rafaelsen, O.J. et al. Saliva secretion following long-term antidepressant treatment with nortriptyline controlled by plasma levels. *Scand J Dent Res* 87:58-64, 1979.

28. Stevens, J.B. and Wilkinson, E.G. Drugs, dry mouth and dental disease. *Psychosomatics* 12:310-311, 1971.

29. Winer, J.A. and Bahn, S. Loss of teeth with antidepressant drug therapy. *Arch Gen Psych* 16:239-240, 1967.

30. Knorr, L.V. and Mornstad, H. Qualitative changes in saliva composition after short-term administration of imipramine and zimelidine in healthy volunteers. *Scand J Dent Res* 89:313-320, 1981.

31. Jacobsson, L., Glitterstam, K. and Palm, U. Objective assessment of anticholinergic side-effect of tricyclic antidepressants: a controlled study of imipramine and inipramin-N-oxide. *Acta Psych Scand* 255:47-53, 1974.

32. Mikkelsen, P.L., Clemesen, L., Lund, B. et al. Antidepressants and saliva secretion. *Int Pharmacopsychiatry*, 1980.

33. Hollister, L.E. Drugs for emotional disorders. *JAMA* 234:942-947, 1975.

34. Slome, B.A. Rampant caries: a side effect

of tricyclic antidepressant therapy. *Gen Dent* Nov.-Dec.:494-496, 1984.

35. Young, J.A. and Van Lennep, E.W. Salivary and Salt Glands. In: *Membrane Transport in Biology*. G. Giebisch, D.C. Tosteson and H.H. Ussing (eds). Berlin, Springer-Verlag, 1979, pp. 563-674.

36. Papas, A., Joshi, A. and Giunta, J. Prevalence and intra-oral distribution of coronal and root caries in middle-aged and older adults. *Caries Res* (in press).

37. Persson, R.E., Izutsu, K.T., Truelove, E.L. et al. Differences in salivary flow rates in elderly subjects using xerostomatic medications. *Oral Surg* 72:42-46, 1991.

38. Edgar, W.M. and O'Mullane, D.M. Saliva and Dental Health. Clinical implications of saliva and salivary stimulation for better dental health in the 1990s. Report of a Consensus Workshop held at Ashford Castle, Co. Mayo, Ireland, July 2-5, 1989.

39. Rounds, M.C. and Papas, A.S. Preventive dentistry for the older adult. In: *Geriatric Dentistry Aging and Oral Health*. A.S. Papas, L.C. Niessen, and H.H. Chauncey (eds). St. Louis, Mosby Year Book, Inc. 1991, pp. 309-330.



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Dental Management of Patients with Sickle Cell Anemia

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ABSTRACT

Sickle cell anemia is endemic in certain parts of the world. With the increase in immigration into Canada from some of these areas, new demands are being placed on the country's health care system. However, improved methods of managing sickle cell anemia have resulted in a longer lifespan and better quality of life for patients afflicted with the disease. In most cases, these individuals can now remain out in the community for most of their lives, and are therefore likely to seek treatment from a neighborhood dentist. Consequently, dentists need to have an appreciation of sickle cell anemia and its implications for dental health. This article outlines the physiology, medical aspects, and dental manifestations of sickle cell anemia, and gives guidelines for its dental management.

SOMMAIRE

Dans certaines régions du monde, la drépanocytose (anémie drépanocytaire) est endémique. Avec le nombre croissant d'immigrants provenant de ces régions, de nouvelles demandes s'ajoutent à notre régime de santé. Cependant, comme les traitements se sont améliorés, les personnes atteintes peuvent espérer vivre plus longtemps et avoir une meilleure qualité de vie. Dans la plupart des cas, elles peuvent maintenant rester chez elles pratiquement toute leur vie, et c'est pourquoi elles peuvent rendre visite au dentiste du quartier. Aussi celui-ci doit-il savoir ce qu'est la drépanocytose et en connaître les répercussions sur la santé dentaire.

Dans cet article, on explique la physiologie, les caractéristiques médicales et les manifestations bucco-dentaires de la drépanocytose ainsi que la façon dont le dentiste doit gérer le patient atteint.

Introduction

Canada's multicultural society includes more than 225,000 citizens of Caribbean and African descent.¹ Immigration statistics indicate that their numbers are increasing,² particularly in Ontario and Quebec.² Dentists in both provinces should therefore be attuned to the special health problems of these individuals. This article concerns one of those unique health problems — sickle cell anemia.

Physiology of Sickle Cell Anemia

Hemoglobin carries oxygen in the body's red blood cells (RBCs). It consists of a heme portion, made up of iron and porphyrin, and four globin chains, normally two alpha chains and two beta chains. However, there are a variety of abnormal hemoglobins that are also compatible with life. Most are caused by a change in one amino acid in the beta chain of hemoglobin, which is coded for on chromosome 113. Hemoglobin S has valine at the sixth position in the beta chain instead of the normal glutamic acid. Normal hemoglobin remains in solution despite its high concentration in the RBCs, even when oxygen binds, causing an alteration of the spatial relationship of its parts.⁴ When oxygen binds to Hemoglobin S, valine bonds to amino acids on the neighboring hemoglobin chain, resulting in the formation of a gel.⁵ Aggregated hemoglobin S attaches to spectrin, a protein underlying the RBC membrane, causing the cell's cytoskeleton to sickle.⁵ Sickled cells are stiffer than normal and cannot squeeze through tiny capillaries, which then become clogged, causing tissue ischemia and ultimately irreversible infarction.⁵ The slowing of the blood flow results in more sickling and painful crises for the patient.⁴

Normal hemoglobin and hemoglobin S are autosomal co-dominant traits.³ Hemoglobin S occurs as a heterozygous condition (SS "trait") in up to 40 per cent of Central Africans, and in a variably estimated proportion of other blacks and people of Mediterranean descent. It is thought to be protective against malaria, which is caused by *Plasmodium falciparum*, a red blood cell parasite. Cells containing Hemoglobin S sickle. Because of their abnormal shape, they are removed from the circulation by the scavenging system of the spleen, which kills the parasite.⁴ Unfortunately, the homozygous condition (SS "disease") usually proves fatal by middle age.⁴ Heterozygotes are usually asymptomatic unless their second hemoglobin gene is also abnormal. In 40 per cent of sicklers, the other gene is for Hemoglobin C (with lysine at the sixth position), while in nine per cent thalassemia is present (Table I).^{3,4,6,7}

TABLE I

Common Genotypes in Sickle Cell Anemia

HS	Sickle cell trait
SS	Sickle cell disease
SC	SC disease
SThal	Sickle cell-Thalassemia

Diagnosis

The only reliable way to diagnose the presence of abnormal hemoglobins is via hemoglobin electrophoresis. A peripheral blood smear may show the characteristic sickled cells (Fig. 1), but this is not reliable, especially if the patient is not having a sickle cell crisis at the time of blood sampling. The popular

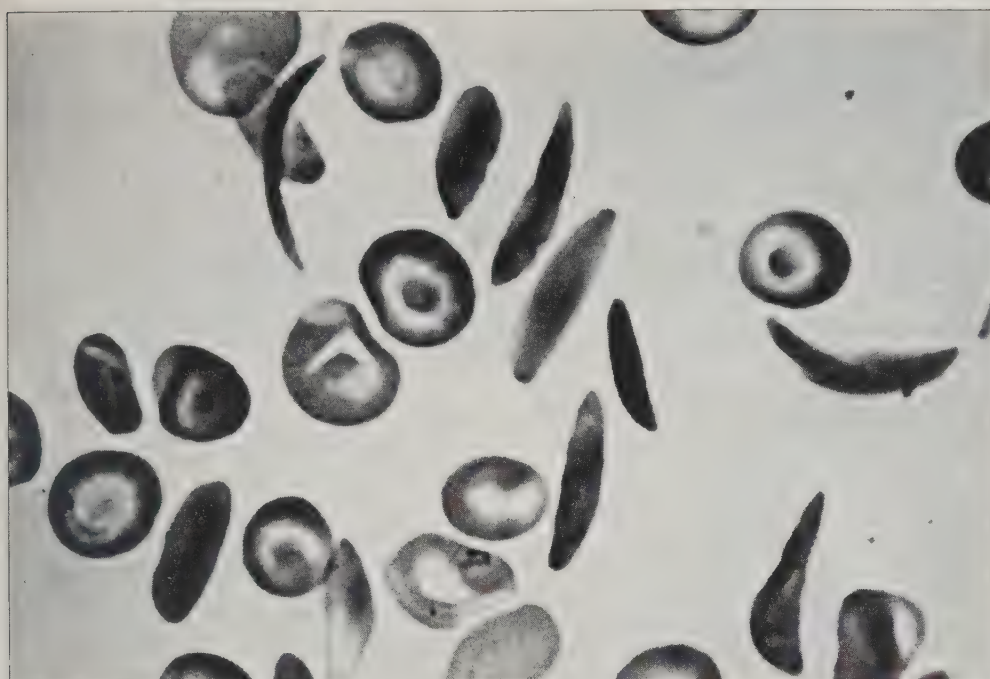


Fig. 1: Blood smear showing typical sickled cells in sickle cell disease. Other common findings include normochromic normocytic anemia, anisocytosis, poikilocytosis, polychromasia, and target cells (Photo courtesy of Dr. J. Francombe).

Sickledex test reveals the presence of Hemoglobin S, but does not distinguish between homozygotes and heterozygotes.³ It is therefore useful as a screening test only.

There are various clinical signs that suggest the presence of a non-specific anemia, such as scleral icterus, mucosal pallor, frontal bossing and growth abnormalities,³ but the current approach for screening is to do a Sickledex test on any patient who is black, Indian or Middle Eastern prior to surgery under a general anesthetic.⁸ If this is positive, hemoglobin electrophoresis is necessary.³

Prenatal diagnosis is now available, which can involve chorionic villus sampling and DNA analysis in the first trimester.^{8,9}

Clinical Presentation

The most common presentation of sickle cell anemia in children is pain and swelling of the hands and feet (dactylitis), followed by abdominal pain (Table II).¹⁰ Painful crises are precipitated most frequently by infection,^{11,12} but may also be triggered by dehydration, acidosis, trauma and over-exertion.^{11,12} Crises present with weakness, signs of anemia (such as pallor, jaundice, vertigo, shortness of breath, and heart murmurs), and a great deal of pain, but unfortunately there is no objective diagnostic test.¹³ Patients with frequent crises require multidisciplinary management, both acutely and prophylactically. Re-

hydration and pain management serve to help the patient through a crisis, but education, counselling, vaccines for

hepatitis B, pneumococcus, and hemophilus B as well as folic acid supplementation, and regular monitoring for end organ damage improve the quality and length of the patient's life.³ Current clinical trials are focusing on increasing the proportion of normal fetal hemoglobin produced in these patients, and there is some indication that hydroxyurea therapy can reduce hemolysis and sickling in this disease.¹⁴⁻¹⁶

Dental Manifestations

In a crisis, patients may complain of toothache, jaw pain, or jaw swelling. Toothache can occur in the absence of caries if the tiny pulpal vessels are blocked with sickle cell emboli.⁶ Mental nerve paresthesia can occur through the same mechanism.¹⁷ Mandibular infarcts or osteomyelitis can also occur in this population.^{6,17}

Oral examination may reveal palatal pallor or icterus,^{11,17-19} and in children there may be delayed tooth eruption or unusual degrees of periodontitis.^{6,17-19} Enamel and dentin can be hypominer-

Table II

Common Clinical Presentations of Sickle Cell Anemia

General

1. Pain
2. Infection
 - a) *S. pneumoniae* septicemia/pneumonia
 - b) Urinary tract infections
 - c) *Salmonella* or *Staphylococcus* osteomyelitis

Head and Neck

3. Stroke
4. Eye
 - a) Retinopathy
 - b) Vitreous hemorrhage
 - c) Retinal detachment

Chest

5. Pulmonary emboli/infarcts

Abdominal

6. Splenic sequestration crises
7. Gallstones, acute cholecystitis
8. Renal dysfunction/failure
9. Priapism

Musculoskeletal

10. Leg ulcers
11. Aseptic necrosis of the femoral head
12. Septic arthritis
13. Hand and foot syndrome (dactylitis)

alized, but DMFT scores are within the normal range.^{6,11,17,18} Maxillary bone hypertrophy is occasionally seen in adults.²⁰

Radiographic changes are seen in a high proportion of sickle cell patients. Intraoral films are well suited to pick up these changes, since they are closely apposed to bone and thus record fine bone detail.^{6,21-23} There is generalized radiolucency of bone, since increased erythropoietic demands cause marrow expansion.^{6,17,19,21,22,24,25} This also causes fine trabeculae to be lost, resulting in a coarse pattern of horizontal step-ladder trabeculae between tooth roots.^{6,11,19,21,23,25,26} The lamina dura appears to be more prominent, while the mandibular cortex is thinned.^{11,19} Scattered foci of sclerosis indicate previously healed infarcts.^{23,27,28} Decreased bone growth is common, resulting in mandibular retrusion.^{6,19} Cephalometric studies rarely reveal frontal bossing, a hair-on-end appearance of the skull, and calvarial thickening.²⁰

The teeth may be hypomineralized, have pulpal denticles, or have hypercementosis.^{6,11} These bone and tooth changes are seen in both heterozygotes and normal individuals, and are therefore not useful diagnostically.²³

Preventive Dental Care

Preventive dental care is especially important in homozygotes because dental infections can precipitate crises.^{17,18} Appointments should be kept short and stress reduction techniques should be used,^{18,28} including iatrogenic sedation and mild pre-medication if indicated.^{6,18} Frequent prophylaxis and fluoride treatments to maintain gingival health and prevent caries are mandatory for these patients. Antibiotic prophylaxis prior to scaling appointments has been recommended, since the gingival crevice may be the site of origin of bacteremia that can lead to a sickling crisis.³⁰ Defective spleen function, universally present in these patients, leaves them more vulnerable to infection because immunoglobulin production is reduced and phagocytosis of foreign antigens is impaired.²⁶

Routine treatment can be carried out between crises, but only palliative treatment is possible during crises.¹⁷ Known sicklers who present with oral pain may become diagnostic challenges unless the mechanism of crises is kept in mind. For example, dental pain in the absence of caries may be due to an intrapulpal infarct. As well, osteomyelitis of the mandible without a dental origin has

been reported.²⁹ This is more frequent in children, because they have large marrow spaces that become necrotic when infarcted and provide a good culture medium for bacteria. Presentation may include mental nerve paresthesia secondary to pressure neuropathy and infectious neuritis.²⁹

Anesthesia and Analgesia

There is general consensus that sickle cell anemia patients are most safely anesthetized using local anesthetics with a vasoconstrictor, since it is now known that local circulation continues adequately.^{6,17} Nitrous oxide sedation with a minimum of 50 per cent oxygen can be added as well.^{6,17} Intravenous sedation must be used with caution as respiration may be suppressed. The dose must be titrated carefully, and narcotics and barbiturates are best avoided. Oral analgesia is best provided with acetaminophen and codeine combination preparations. Acetyl salicylic acid is not recommended because it may lead to acidosis.^{17,18,30}

When general anesthesia is desired, these patients require preoperative evaluation by a qualified anesthesiologist. Prevention of hypothermia, hypovolemia, hypotension, hypoxia, and acidosis is important to prevent stasis.³⁰ Intravenous fluids to maintain volume start once the patient is not taking anything by mouth, in anticipation of the loss of protective reflexes during general anesthesia.⁷ Surgery should be scheduled for the morning to avoid fasting ketosis and dehydration.^{17,30} Promethazine is given two hours preoperatively, as it helps inhibit sickling, and oxygen is administered by mask from this point until 24 to 48 hours postoperatively.³ Warming blankets are used in the operating and recovery rooms.³¹ Attention to body positioning, for example, keeping ankles uncrossed, is also important.⁶ Monitoring after surgery is continued, especially fluid status, and early ambulation and chest physiotherapy are employed.^{3,7}

Oral Surgery

Prior to surgery, all potential candidates for sickle cell anemia should be screened with a Sickledex test. If this is positive, hemoglobin electrophoresis must be done because the disease may be latent, especially in the SC genotype.^{3,31} A baseline complete blood count and reticulocyte count, and cross-match of reserved blood are necessary.³ If anemia is severe, a transfusion may be undertaken. This can be a direct

transfusion or more appropriately an exchange transfusion, where small amounts of the patient's blood are removed and replaced with normal donor cells in an attempt to reduce the number of sickle-prone cells to less than 30 per cent.^{3,10,17,18,30,31} Prophylactic antibiotics and folic acid are given.³ Antibiotics are given both to prevent bacteremia, which may precipitate remote sickling and to prevent intraoral infection, which may precipitate local sickling. Currently, the American Heart Association recommends amoxicillin, three grams one hour prior to the procedure and 1.5 grams six hours later, given orally.³² This antibiotic is equally as effective as the previously recommended penicillin, but is better absorbed in the gastrointestinal tract, resulting in higher and more prolonged serum levels.³²

Summary

Children and adults with sickle cell anemia can now be medically managed so well that many are out in the community and, as such, will require the services of the local dentist. Their dental health can be properly maintained in a community setting providing the rules for the prevention of oral infection are known and adhered to by the dentists involved in their care. If dental emergencies arise or complex treatment is required, it is important for dentists to remember the mechanism of sickling in these patients, and to ensure that the instigators of these processes are kept under control. ■

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References

1. Statistics Canada. 1986 Census.
2. Employment and Immigration Canada: Immigration Statistics 1991.
3. Esseltine, D.W., Baxter, M.R.N. and Bevan, J.C. Sickle cell states and the anesthetist. *Can J Anaesth* 35:385-403, 1988.
4. Harmening, D.M. *Clinical hematology and fundamentals of hemostasis*. Philadelphia, F.A. Davis Co., 1992.
5. Brookoff, D. A protocol for defusing sickle cell crisis. *Emerg Med* 24:131-140, 1992.
6. Sanger, R.G. and McTigue, D.J. Sickle cell anemia - its pathology and management. J

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Dent Handicap 3:9-21, 1978.

7. Yardumian, A. and Davies, S.C. Clinical management of severe sickle cell disease. *Acta Haemat* 78:193-197, 1987.

8. Darbyshire, P. Sickle cell disease in the U.K. *Practitioner* 234:722-726, 1990.

9. Old, J.M., Fitches, A., Heath, C. et al. First trimester fetal diagnosis for haemoglobinopathies: report on 200 cases. *Lancet* 2:763-767, 1986.

10. Charache, S., Lubin, B. and Reid, C.D. *Management and therapy of sickle cell disease*. Bethesda, U.S. Dept. of Health and Human Services, 1984.

11. Rada, R.E., Bronny, A.T. and Hasiakos, P.S. Sickle cell crisis precipitated by periodontal infection: report of 2 cases. *JADA* 114:799-801, 1987.

12. Michelson, R.K. and Whitmore, R.B. Sickle-cell anemia in the dental patient: report of two cases. *Oral Surg* 23:19-24, 1967.

13. Ballas, S.K. Treatment of pain in adults with sickle cell disease. *Am J Hematol* 34:49-54, 1990.

14. Goldberg, M.A., Brugnard, C., Dover, G.J. et al. Treatment of sickle cell anemia with hydroxyurea and erythropoietin. *N Eng J Med* 323:366-372, 1990.

15. Rodgers, G.P., Dover, G.J., Noguchi, C.T. et al. Hematologic responses of patients with sickle cell disease to treatment with hydroxyurea. *N Eng J Med* 322:1037-1045, 1990.

16. Charache, S., Dover, G.J., Moyer, M.A. et al. Hydroxyurea-induced augmentation of fetal hemoglobin production in patients with sickle cell anemia. *Blood* 69:109-116, 1987.

17. Smith, H.B., McDonald, D.K. and Miller, R.I. Dental management of patients with sickle cell disorders. *JADA* 114:85-87, 1987.

18. Cullen, C.L. Sickle cell anemia: dental management of the child patient. *J Mich Dent Assoc* 64:77-78, 1982.

19. Razmus, T.F., and Fotos, P.G. Oral medicine in clinical dentistry; hematologic disorders. *Compendium* 8:214-221, 1987.

20. Russell, M.O. and Ohene-Frempong, K. Homozygous sickle cell disease. In: Schwartz, E. (ed). *Hemoglobinopathies in Children*. Littleton, Mass. PSG Publishing Co. Inc., 1980.

21. Robinson, I.B. and Sarnat, B.G. Roentgen studies of the maxillae and mandible in sickle cell anemia. *Radiology* 58:517-523, 1952.

22. Morris, S.L. and Stahl, S.S. Intraoral roentgenographic changes in sickle-cell anemia. *Oral Surg* 7:787-791, 1954.

23. Halstead, C.L. Oral manifestations of hemoglobinopathies. *Oral Surg* 30:615-623, 1970.

24. Prowler, J.R. and Smith, E.W. Dental bone changes occurring in sickle-cell diseases and abnormal hemoglobin traits. *Radiology* 65:762-769, 1955.

25. Mourshed, F. and Tuckson, C.R. A study of the radiographic features of the jaws in sickle-cell anemia. *Oral Surg* 37:812-819, 1974.

26. Cullen, B.L. and Peterson, D.S. Dental management for the sickle cell anemia patient. *J Mich Dent Assoc* 61:587-588, 1979.

27. BenDridi, M.F., Oumaya, A., Gastli, H. et

al. Radiological abnormalities of the skeleton in patients with sickle-cell anemia. *Pediatr Radiol* 17:296-302, 1987.

28. Hammersley, N. Mandibular infarction occurring during a sickle cell crisis. *Br J Oral Maxillofac Surg* 22:103-114, 1984.

29. Girasole, R.V. and Lyon, E.D. Sickle cell osteomyelitis of the mandible: report of three cases. *J Oral Surg* 35:231-234, 1977.

30. Demas, D.C., Cantin, R.Y., Poole, A. et al. Use of general anesthesia in dental care of the child with sickle cell anemia. *Oral Surg* 66:190-193, 1988.

31. Kinsey, R.W., Ballard, J.B. and Matukas, V.J. Sickle cell hemoglobinopathies: a protocol for management. *J Oral Surg* 37:441-446, 1979.

32. Dajani, A.S., Bisno, A.L., Chung, K.J. et al. Prevention of bacterial endocarditis: recommendations by the American Heart Association. *JAMA* 264:2919-2922, 1990.

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A 25-year-old male developed painful circum oral erythema several hours following dental treatment. This recurred following several dental visits. Patch tests showed marked reactions to many brands of gloves, including hypoallergenic ones.

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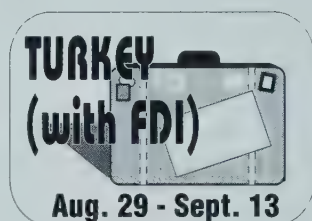
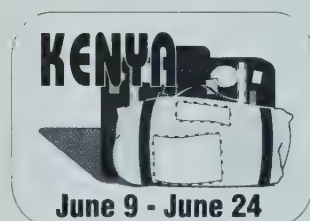
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Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia — A Case Report

Kathy Russell, B.Sc., DDS
Rebecca Yacobi, B.Sc., M.Sc., DDS, Dip. Ped.
Toronto

ABSTRACT

An abnormal exfoliation pattern of the primary teeth is a sign of a systemic abnormality affecting more than just the oral structures. A prompt investigation of the cause of this condition is mandatory to identify any disease process and to initiate the required treatment. This article presents a case of mild hypophosphatasia concomitant with odontodysplasia in a 4½-year-old female. The child's condition was first detected due to the early exfoliation of her primary teeth. This article also discusses the two different disease entities and the reasoning that led to the final diagnosis.

SOMMAIRE

Une exfoliation anormale des dents de lait est le signe d'une anomalie systémique affectant non seulement les structures de la bouche mais tout l'organisme. Il faut donc procéder le plus tôt possible à un examen pour en trouver la cause, identifier la maladie et donner le traitement qui convient. Dans cet article, on présente un cas bénin d'hypophosphatasie (syndrome de Rathburn) doublée d'une odontodysplasie chez une fillette de quatre ans et demi qui perdait précocement ses dents de lait. On y explique ces deux maladies différentes ainsi que le raisonnement qui a conduit au diagnostic final.

Introduction

Hypophosphatasia is an inherited disease that can be transmitted as an autosomal recessive or autosomal dominant.^{1,2} It was first recognized by Rathburn³ in 1948. At the time, this condition was thought to be caused by

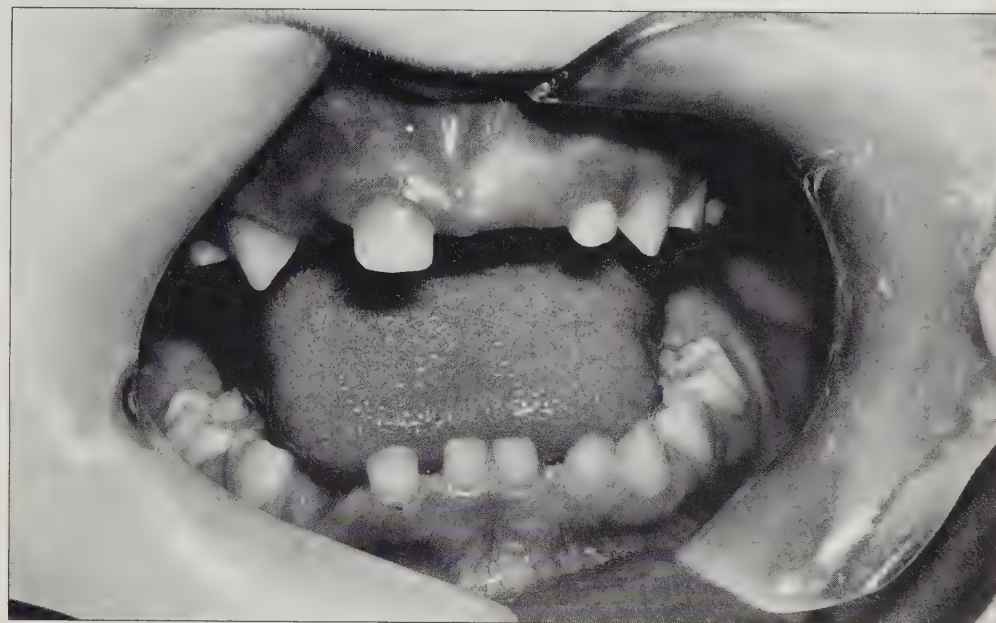


Fig. 1: Frontal intraoral full-mouth photograph.

an inborn error of metabolism. The disease arises from a decreased level of the enzyme alkaline phosphatase in the serum or the tissues, and an increased level of phosphoethanolamine in the urine. Fraser^{4,5} described three types of hypophosphatasia, based on the patient's age at the onset of the disease. There is some uncertainty with regard to the distinctness of the borderlines between the three types, however. The types of hypophosphatasia identified by Fraser are: infantile hypophosphatasia, which occurs prior to six months of age, childhood hypophosphatasia, which occurs after six months of age, and the adult form. The incidence of the disease is presently unknown, and is difficult to identify, as patients often have no symptoms.

Odontodysplasia is a dental condition that can affect both the primary and secondary dentitions. Radiographic examination frequently reveals large pulp chambers. This has given rise to the use of the descriptive term "ghost teeth" in

association with this condition.⁶⁻⁸ Abnormal tooth loss is often the earliest symptom observed in patients with odontodysplasia.

The purpose of this article is to present a clinical case of mild hypophosphatasia and odontodysplasia in a 4½-year-old girl, and to briefly review the different forms of hypophosphatasia and odontodysplasia.

Case Report

A 4½-year-old white female with an abnormal exfoliation pattern and early mobility of her primary teeth was referred to the dental clinic at The Hospital for Sick Children by her family dentist. Intraoral clinical and radiographic examination revealed a caries-free dentition. The maxillary right lateral and maxillary left central incisors and the mandibular right cuspid were not present clinically (Fig. 1). The maxillary right central and left lateral incisors were moderately mobile, while the

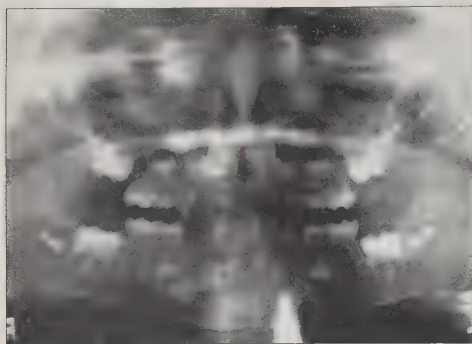


Fig. 2: Panoramic radiograph.

mandibular left central incisor, left cuspid, and the mandibular right central incisor were mildly mobile. The patient was symptom- and pain-free and there was no recent history of trauma to the teeth.

Medical History

The patient was born in Jordan, after a normal nine month pregnancy, to Arabic parents who were consanguineous. Her early developmental stages were normal. Her medical history was uneventful with the exception of two incidents: at six months of age she fell and fractured her distal left femur, and at two years of age she started gaining excessive weight. At the time of presentation, her weight was above the 97th percentile and her height was average for her age. Family members were in good health, with the exception of the father, who had a history of peptic ulcers.

Dental History

The patient's first primary tooth, the mandibular central incisor, erupted at five months. At one year, she fell and completely fractured the maxillary left central incisor at the cemento-enamel junction. Subsequent premature exfoliation and loosening of the teeth began six months prior to her presentation at the dental department of The Hospital for Sick Children.

Diagnostic Procedures

The patient's initial examination included a radiographic survey with panoramic, maxillary and mandibular occlusal and lateral cephalometric films (Figs. 2, 3 and 4). The panoramic and occlusal views revealed the appearance of "ghost teeth." Radiographically, root fragments were observed in the dento-alveolus. While the crown structures appeared normal, the root component of the teeth exhibited large pulp spaces

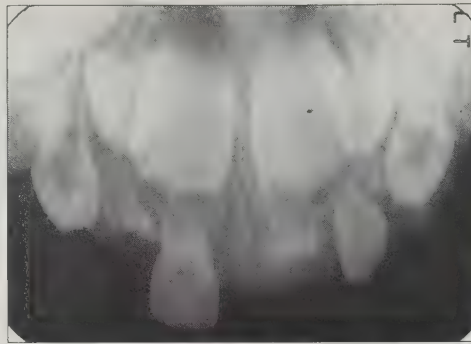


Fig. 3: Maxillary anterior occlusal radiograph.

enclosed by a thin shell of calcified tissue. The teeth were less radiopaque than normal.

The differential diagnosis included dentinogenesis imperfecta, ghost teeth of odontodysplasia, hypophosphatasia syndrome and vitamin D-resistant rickets. As a result of the potential systemic involvement, the patient was referred to the endocrine clinic at The Hospital for Sick Children for a complete medical assessment.

Examination by an endocrinologist revealed no physical signs of rickets or hypophosphatasia. The patient's skull and long bones showed no abnormalities. However, there was generalized osteoporosis and genu valgum (inward or medial curving of the knee) of both knees. The biochemical tests revealed a mild reduction in alkaline phosphatase level (137 U/L, with reference levels of 185-425 U/L). The phosphoethanolamine level, thyroid function, morning and evening cortisol and all other tests were within normal limits.

Histology

The extracted crown and root fragments were submitted for pathologic examination. No enamel was identified on the specimens. Only a small amount of cementum was present and its structure appeared normal. The pulpal tissue was within normal limits. The dentin layer showed an abnormal morphology, however. While the deepest layer had a well-ordered arrangement, the superficial layers consisted of randomly-arranged dentinal tubules and an irregularly arranged matrix. Only the rare viable odontoblast could be identified.

Diagnosis

A medical diagnosis of mild hypophosphatasia was made, which was supported by biochemical tests. Aspects of the dental radiographic and histologic examinations did not support the medi-

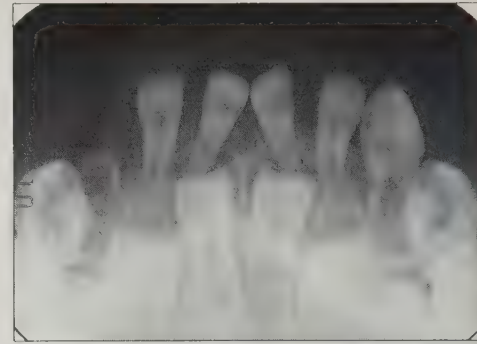


Fig. 4: Mandibular anterior occlusal radiograph.

cal diagnosis, but were characteristic of generalized odontodysplasia of at least the primary dentition.

Treatment

The loose tooth fragments were extracted to prevent any possible infection or ingestion. A lower lingual retaining arch was fabricated and inserted to prevent space loss as a result of the extractions. The patient was placed on a three-month recall schedule to monitor the exfoliation pattern of her primary teeth as well as the development of her permanent dentition. The arch length will be monitored during the eruption of the permanent dentition. At the time of treatment, it was not possible to determine if the permanent teeth were also affected.

The patient has been referred for dietary counselling and was also seen by the orthopedic and endocrinology departments. At the present time, the patient is not undergoing any active medical treatment. She will be closely monitored for any further developments by these two departments.

Discussion

This case illustrates the importance of careful investigation to determine the possible systemic etiology for a patient's dental complaint. Often, evidence of systemic disease will initially manifest itself in the oral cavity.⁹ A complete dental examination as well as appropriate medical investigation are required to attain the correct diagnosis. Hypophosphatasia is only one of many diseases that can be first detected in the oral cavity. One of the symptoms of hypophosphatasia is an abnormal exfoliation pattern. Many patients present for dental treatment because of the early loss of teeth. There are many reasons for a complete or partial premature loss of teeth, including leukemia, sarcoma, histiocytosis X, hypophosphatasia,

odontodysplasia and benign neoplasms.⁸⁻¹⁰ In this particular case, the cause of the "premature tooth loss" was odontodysplasia and not the patient's medical condition of mild hypophosphatasia.

Infantile hypophosphatasia is inherited as an autosomal recessive trait and is often fatal. The infantile form is the most severe type of the disease.¹¹ At its onset, the patient may exhibit anorexia, irritability, persistent vomiting, mild pyrexia and failure to grow and gain weight.^{11,12} It also involves skeletal and growth deficiencies that lead to systemic problems such as infections, complications from increased cranial pressure, and renal problems from calcium imbalance. There is decreased ossification of the skeleton and shortened long bones.^{11,13}

The prognosis for the patient with childhood hypophosphatasia is much better than for the child with an infantile onset of the disease. Childhood hypophosphatasia can be inherited as an autosomal dominant or autosomal recessive trait.^{13,14} The patient is prone to skeletal defects, including rickets, and often there is bulging of the anterior fontanelle, short ribs and hypotonia. Infections, growth retardation, and gastrointestinal, pulmonary and renal complications may also be present.^{11,13,14}

The adult form of hypophosphatasia is the least severe of the three types. The patient may lose adult teeth and suffer from numerous bony fractures, which are thought to result from osteomalacia. Radiographic examination may reveal the presence of osseous radiolucencies.^{9,11,13}

Changes in the calcified tissues may become evident at any time during the development of the disease, and the ends of the long bones may become enlarged and may exhibit a reduction in growth.¹² There may be less calcified bony structure at the metaphyseal portions of the long bones, as well as a lack of structure between the diaphysis and the epiphysal cartilage. There may also be islands of bone separated by osteoid tissue.¹²

Biochemical investigation of patients with any form of hypophosphatasia can reveal varying degrees of decreased serum and tissue alkaline phosphatase levels, as well as elevated urine phosphoethanolamine levels.^{4,11,12} The enzyme alkaline phosphatase normally liberates phosphate ions from various organic phosphates, which can then be taken up by tissues in the body. When

the concentration of this enzyme is decreased, a decreased level of phosphate ions is liberated from the organic phosphate complexes, and therefore an increased level of ethanolamine phosphate (a form of organic phosphate) is found in the urine. As a result of the low phosphate ion levels, problems arise in the bone, teeth and kidneys.

An early diagnosis of hypophosphatasia is often made from oral manifestations. The most common clinical dental manifestation is premature loss of deciduous teeth, specifically the mandibular incisors.^{4,15-17} There is no predilection for tooth loss related to gender.⁹ Radiographic examination reveals large pulp spaces as well as alveolar bone loss.¹⁶⁻¹⁸ In some cases, the roots may not develop, and the cementum is frequently abnormal or lacking.¹² Subsequently, the periodontal ligament attachment and the stability between the bone and the tooth are reduced. The teeth are thought to undergo normal calcification, although the alveolar bone does not, which leads to a decrease in the bony support for the teeth. The lack of bony support and periodontal attachment between tooth and bone can explain why there is premature loss of teeth.^{19,20} The permanent dentition may also be affected in a similar fashion.

Odontodysplasia is usually a regional disorder involving the maxillary anterior teeth, although cases involving more than one area have been reported.⁸ Different causes for this entity have been proposed, including somatic mutation, trauma, circulation problems, infections, and metabolic disorders. The characteristic clinical features of odontodysplasia consist of delayed or unerupted teeth, thin and yellow enamel and abnormally shaped teeth. Radiographically, there is decreased radiodensity of the teeth with widened pulp chambers, giving rise to the "ghost appearance" description of these teeth. Histologically, there are reduced amounts of both enamel and dentin structures, and irregular enamel and dentin forms. The pre-dentin zone is widened, while the dentin itself has a lack of tubules and exhibits a globular form.^{7,8,21}

A medical diagnosis of mild hypophosphatasia was made for this patient. It was not possible to make a dental diagnosis of hypophosphatasia since the classical features of the condition – loss of anterior alveolar bone, abnormal cementum structure and premature loss of primary incisors – were not present

in their entirety. The symptoms and signs in this case were actually more consistent with the dental diagnosis of odontodysplasia. These included the disrupted anatomic tooth form, large pulp chambers, reduced radiodensity, reduced amounts of both enamel and dentin, widened predentin zone, lack of dentinal tubules, and globular appearance of dentin. Odontodysplasia is more frequently a regional disorder, but in this case all of the primary teeth had the "ghost appearance," indicating a more generalized form of odontodysplasia.

Conclusions

Abnormal exfoliation patterns of primary teeth should not be overlooked or thought of as an extreme characteristic of normal. Often, these patterns are signs of systemic diseases and for this reason should be thoroughly investigated. Separate investigations of the case should be completed by both dental and medical specialists. As seen in the case presented here, the dental and systemic problems may not have the same etiologies, and the isolated disease processes may require individually diagnosed treatment plans. Hypophosphatasia is a disease that affects all age groups and is often first detected after the patient presents in the dental office with oral manifestations. The oral manifestations have some features in common with odontodysplasia. Patients with these diseases should have a complete clinical examination, radiographic assessment and be referred to the appropriate medical specialists for metabolic and endocrine investigations. Continuing dental care is required to monitor further exfoliations, space maintenance requirements and the involvement and eruption of the permanent teeth. ■

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References

1. Eastman, J. and Bixler, D. Clinical, laboratory and genetic investigations of hypophos-

phatasia: support for autosomal dominant inheritance with homozygous lethality. *J Craniofac Genet Dev Biol* 3:213-234, 1983.

2. Silverman, J.L. Apparent dominant inheritance of hypophosphatasia. *Arch Int Med* 110:191-198, 1962.

3. Rathburn, J.C. Hypophosphatasia, a new developmental anomaly. *Am J Dis Child* 75:822-831, 1948.

4. Macfarlane, J.D. and Swart, J.G.N. Dental aspects of hypophosphatasia: A case report, family study, and literature review. *Oral Surg* 67:521-526, 1989.

5. Fraser, D. Hypophosphatasia. *Am J Med* 22:730-746, 1957.

6. Ferguson, J.W. and Geary, C.P. Regional odontodysplasia. *Aust Dent J* 25:148-151, 1980.

7. Lustmann, J., Klein, H. and Ulmansky, M. Odontodysplasia: report of two cases and review of the literature. *Oral Surg* 35:781-793, 1975.

8. Pindborg, J.J. *Pathology of the Dental Hard Tissues*. Philadelphia, Saunders, 1970.

9. Shafer, W.G., Hine, M.K. and Levy, B.M. *A Textbook of Oral Pathology*, Ed. 4., Philadelphia, Saunders, 1983.

10. Eversole, L.R. *Clinical Outline of Oral Pathology: Diagnosis and Treatment*, Ed. 2., Philadelphia, Lea & Febiger, 1984.

11. Boraz, R.A. Hypophosphatasia: Report of a case with unique oral manifestations *J Pedo* 13:44-52, 1988.

12. Worth, H.M. *Principles and Practice of Oral Radiologic Interpretation*. Chicago, Yearbook Medical Publishers Inc., 1963.

13. Fallen, M.D. et al. Hypophosphatasia: clinicopathologic comparison of the infantile, childhood and adult forms. *Medicine* 63:12-24, 1984.

14. Beumer, J., Trowbridge, K.O., Silverman, S. et al. Childhood hypophosphatasia and the premature loss of teeth. A clinical and laboratory study of seven cases. *Oral Surg* 35:631-639, 1973.

15. Fung, D.E. Hypophosphatasia. *Br Dent J* 154:49-50, 1983.

16. Jedrychowski, J.R. and Duperon, D. Childhood hypophosphatasia with oral manifestations. *J Oral Med* 34:18-22, 1979.

17. Ritchie, G.M. Hypophosphatasia: a metabolic disease with important dental manifestations. *Arch Dis Child* 39:584-590, 1964.

18. Baer, P.N., Brown, N.C. and Hamner, J.E. Hypophosphatasia: A report of two cases with dental findings. *Periodontics* 2:209-215, 1964.

19. Cheung, W.S. A mild form of hypophosphatasia as a cause of premature exfoliation of primary teeth: report of two cases. *Ped Dent* 9(1):49-52, 1983.

20. Primstone, B., Eisemberg, E. and Silverman, S. Hypophosphatasia: genetic and dental studies. *Ann Intern Med* 65:722-729, 1966.

21. Walton, J.L., Witkop, C.P. and Walker, P.O. Odontodysplasia: report of three cases with vascular nevi overlying the adjacent skin of the face. *Oral Surg* 46:676-684, 1978.

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TORADOL (ketorolac tromethamine) 10 mg tablets
 TORADOL IM (ketorolac tromethamine) 15 mg/mL and 30 mg/mL intramuscular injections

THERAPEUTIC CLASSIFICATION

Analgesic Agent

ACTION

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug that exhibits analgesic activity. Its mode of action is to inhibit the cyclo-oxygenase enzyme system, thereby inhibiting the synthesis of prostaglandins, and is considered to be a peripherally acting analgesic. At analgesic doses it has minimal anti-inflammatory and antipyretic activity.

Ketorolac tromethamine is rapidly and completely absorbed when administered by both the oral and intramuscular routes, and pharmacokinetics are linear following single and multiple dosing.

Steady state plasma levels are attained after one day of Q.I.D. dosing. Based only on pharmacokinetic principles, a faster attainment of the steady state plasma level might be achieved with a loading dose of about twice the maintenance dose. This occurs when the dosing interval is approximately equal to the drug's half-life.

Following oral administration, peak plasma concentrations of 0.52 to 1.31 mcg/mL occurred 35 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 4.1 and 6.1 hours in healthy adults, while in elderly subjects (mean age: 72 years) it ranged between 3.0 and 6.1 hours. A high fat diet decreased the rate but not the extent of absorption of oral ketorolac tromethamine, while antacid had no effect.

Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 mcg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.8 and 6.3 hours in young adults and between 4.4 and 8.6 hours in elderly subjects (mean age: 72).

The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) and the remainder is excreted in the feces.

More than 99% of the ketorolac in plasma is protein bound over a wide concentration range.

INDICATIONS

Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopedic and gynecological operative procedures.

CONTRAINDICATIONS

Toradol (ketorolac tromethamine) should not be used where there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, ketorolac tromethamine should not be used in patients in whom acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory agents induce acute asthmatic attacks, urticaria, rhinitis or other allergic manifestations. Fatal anaphylactoid reactions may occur in such individuals.

Toradol (ketorolac tromethamine) also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system.

WARNINGS

Long-term administration of ketorolac tromethamine oral formulation has shown that this drug shares the risks that other non-steroidal anti-inflammatory drugs pose to patients when taken chronically. Peptic ulceration, perforation and gastrointestinal bleeding, sometimes severe and occasionally fatal have been reported during therapy with non-steroidal anti-inflammatory drugs and may occur with ketorolac tromethamine, both in the presence or absence of previous symptoms. Elderly and debilitated individuals are most susceptible to these complications, the incidence of which increases with dose and duration of treatment. Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases the physician must weigh the benefits of treatment against the possible hazards.

Patients taking any non-steroidal anti-inflammatory drug including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted and the patient closely monitored.

Ketorolac tromethamine is not recommended for routine use with other non-steroidal anti-inflammatory drugs because of the potential for additive side effects.

Use in pregnancy, lactation and labour: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation.

Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of non-steroidal anti-inflammatory drugs on uterine contraction and fetal circulation.

Use in children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the renal effects of non-steroidal anti-inflammatory drugs, extra caution and the lowest effective dose should be used.

PRECAUTIONS

Renal effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with ketorolac tromethamine. Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, patients with significant impairment of renal function (serum creatinine values greater than 5 mg/dL) should not receive ketorolac tromethamine unless the expected benefits outweigh the risks. In patients with moderately impaired renal function serum creatinine values ranging from 1.9 to 5.0 mg/dL, the rate of ketorolac clearance was reduced to approximately half of normal. The total daily dose of ketorolac tromethamine should be reduced by half in such patients. The disposition of ketorolac in dialysis patients has not been studied.

Patients who are volume depleted because of blood loss or severe dehydration may be dependent on renal prostaglandin production to maintain renal perfusion and therefore glomerular filtration rate. In such situations the use of drugs which inhibit prostaglandin synthesis might be expected to further decrease renal blood flow. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until the patient is normovolemic.

Hepatic effects: Meaningful elevations (greater than 3 times normal) of serum transaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxaloacetic (SGOT or AST)) occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and electrolyte balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other non-steroidal anti-inflammatory drugs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be borne in mind. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions predisposing to fluid retention.

Hematologic effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Patients who have coagulation disorders or are receiving drug therapy that interferes with hemostasis should be carefully observed when ketorolac tromethamine is administered. Unlike the prolonged effects from aspirin, the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued.

Blood dyscrasias associated with the use of non-steroidal anti-inflammatory drugs are rare, but could occur with severe consequences.

Infection: In common with other anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

Drug interactions: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration.

Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine.

Ketorolac tromethamine does not alter digoxin protein binding.

In vitro studies indicated that at therapeutic concentrations of salicylates (300 mcg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5%. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, tolbutamide and piroxicam did not alter ketorolac tromethamine protein binding. Since ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly.

There is no evidence in animal or human studies that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Ketorolac tromethamine mildly reduces the diuretic response to furosemide in normovolemic subjects. Inhibition of renal lithium clearance leading to an increase in plasma lithium concentration and potential lithium toxicity has been reported with some non-steroidal anti-inflammatory drugs. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Concomitant administration of methotrexate and some non-steroidal anti-inflammatory drugs have been reported to reduce the clearance of methotrexate, enhancing the toxicity of methotrexate. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

There is limited experience on concurrent administration with morphine. Available information shows no evidence of adverse interactions. The extent of a possible narcotic-sparing effect of ketorolac tromethamine is currently under investigation.

ADVERSE EFFECTS

Toradol tablets: The incidence of adverse reactions in approximately 600 patients and subjects receiving short-term oral therapy (less than 2 weeks) with Toradol (ketorolac tromethamine) are listed below. The most common adverse effects include: Gastrointestinal: dyspepsia (2%); gastrointestinal pain (2%); nausea (2%). Central nervous system: headache (2%); dizziness (2%).

The following adverse events are rare but have been reported (less than 1%): Gastrointestinal: flatulence, gastritis. Respiratory: dyspnea. Dermatologic: urticaria, rash, pruritus. Metabolism/nutritional: edema. Body as a whole: asthenia. Hemic and lymphatic: purpura. Musculoskeletal: myalgia.

Toradol IM: The adverse reactions listed below were reported to be probably related to Toradol IM in clinical trials in which patients received up to 20 doses of 30 mg of intramuscularly administered Toradol over a period of up to five days. Incidence between 3 and 9%. Gastrointestinal: nausea, dyspepsia, gastrointestinal pain. Central nervous system: drowsiness. Incidence between 1 and 3%. Gastrointestinal: diarrhea. Central nervous system: dizziness, headache, sweating. Body as a whole: edema. Injection site pain was reported by 2% of patients in multi-dose studies (vs. 5% for morphine control group). Incidence 1% or less: Gastrointestinal: constipation, flatulence, gastrointestinal fullness, liver function abnormalities, melena, peptic ulcer, rectal bleeding, stomatitis, vomiting. Body as a whole: asthenia, myalgia. Cardiovascular: vasodilation, pallor. Hemic and lymphatic: purpura. Nervous system: dry mouth, nervousness, paresthesia, abnormal thinking, depression, euphoria, excessive thirst, inability to concentrate, insomnia, stimulation, vertigo. Respiratory: dyspnea, asthma. Urogenital: increased urinary frequency, oliguria. Dermatologic: pruritus, urticaria. Special senses: abnormal taste, abnormal vision.

OVERDOSAGE

The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused abdominal pain and peptic ulcers which recovered after discontinuation of dosing.

DOSAGE AND ADMINISTRATION

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient.

Oral: The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended.

Toradol is recommended for short-term use only i.e. for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. A lower initial dose may be suitable for patients under 50 kg in body weight, over age 65 years and/or with less severe pain at baseline. In the initial post-operative period, more frequent dosing (e.g., every 2 hours) may be employed, but the total daily dose should not exceed 120 mg. Dose above 120 mg could cause drug toxicity (see Warnings & Precautions). If supplemental analgesia is required, a concomitant low dose of opiate can be used.

The administration of continuous multiple daily doses of Toradol IM should not exceed 5 days for injection dosing. There has been limited experience with dosing for more than 5 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time.

Directions for use: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal (you will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly.

CONVERSION FROM PARENTERAL TO ORAL THERAPY

Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. In the latter case, the total combined daily dose of ketorolac should not exceed 120 mg on the day the change of formulation is made, this includes a maximum of 4 of the 10 mg tablets.

Toradol (ketorolac tromethamine) is a Schedule F drug.

COMPOSITION

Toradol Tablets: Each Toradol tablet contains ketorolac tromethamine, the active ingredient, with microcrystalline cellulose, lactose and magnesium stearate. The coating suspension contains hydroxy-propyl-methylcellulose, titanium dioxide and polyethylene glycol.

Toradol IM: Toradol IM is available for intramuscular administration as: 15 mg in 1 mL (1.5%), or 30 mg in 1 mL (3%) of ketorolac tromethamine in sterile solution. The 15 mg/mL solution contains 10% (w/v) alcohol, USP, and 6.68 mg sodium chloride in sterile water. The 30 mg/mL solution contains 10% (w/v) alcohol, USP and 4.35 mg sodium chloride in sterile water. The pH is adjusted with sodium hydroxide or hydrochloric acid. The sterile solutions are clear and slightly yellow in colour.

STABILITY AND STORAGE RECOMMENDATIONS

Toradol Tablets: Store at room temperature. The blister package tablets should be protected from light.

Toradol IM: Store at room temperature with protection from light.

AVAILABILITY OF DOSAGE FORMS

Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets with one side printed in red with TORADOL inside a bold T and the other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL syringes containing 15 or 30 mg/mL of ketorolac tromethamine.

Product Monograph available on request.

REFERENCES

1. TORADOL Product Monograph, Syntex Inc., Feb. 1991.
2. Compendium of Pharmaceuticals and Specialties, 26th Edition, 1991.
3. Yee JP et al. *Pharmacother* 1986; 6(5):253-61.
4. Brown CR et al. *Pharmacother* 1990; 10(6 Pt 2):455-495.
5. O'Hara DA et al. *Clin Pharm Ther* 1987; 41(5):556-61.
6. Fragen RJ. Data on File, Syntex Inc., Document CL3837, 1987.
7. Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987.
8. Stanski DR et al. *Pharmacother* 1990; 10(6 Pt 2):405-445.
9. Data on File, Syntex Inc., Document #90027-1, 1989.
10. Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):775-935.
11. Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):945-1055.
12. Mehlich D et al. Data on File, Syntex Inc., Document CL3686.
13. Data on File, Syntex Inc., Document #90027-3, 1989.
14. Rooks II WH et al. *Pharmacother* 1990; 10(6 Pt 2):305-325.
15. Mangioni C et al. Data on File, Syntex Inc., Document CL4899, 1989.
16. Huttman W et al. Data on File, Syntex Inc., Document CL4882, 1989.
17. Nedelman P et al. Data on File, Syntex Inc., Document CL3635, 1986.
18. Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989.
19. Diebschlag W, Nocker W. Data on File, Syntex Inc., Document CL5468, 1989.
20. Molinie J et al. Data on File, Syntex Inc., Document CL4624, 1988.
21. Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989.
22. Bloomfield S et al. Data on File, Syntex Inc., Document CL3658, 1986.
23. Sunshine A. Data on File, Syntex Inc., Document CL3674, 1986.

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Raison d'être: *What CDA's new mission statement means to you*

CDA's new mission statement is more than simply the articulation of some lofty ideals. It is, in fact, the cornerstone on which to build a stronger, more dynamic and a more effective organization to represent and to serve dentistry in the 1990's.

TIMES *have* **CHANGED**

The need for a redefined mission is two-fold. First, times have changed. A big part of that change is economic. The booming Eighties are gone, taking with them a train load of unrealistic expectations. We can't have it all; we can't do it all. Not unless we have all the money in the world. And we don't.

The Nineties are proving sobering for all of us. We are all working harder just to hold our own in the face of a dizzying array of issues and challenges: governments looking for more tax dollars, public concerns about threats to their health from dental practices, changes to third party plans that threaten the quality of care in the interest of cost containment, media fanning the flames of public anxiety around anything they can find to make news... In today's environment, every dentist's practice depends in no small part on the authority and credibility with which CDA can be there for us and speak for the profession.

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Second, dentistry itself has changed. Today's dentist is facing the new realities of establishing or maintaining a practice. Getting started is more difficult than ever for the recent graduate. A degree is no longer a ticket to an immediately rewarding career. The costs of establishing a new practice are prohibitive; associateships are in short supply. The knowledge explosion makes it difficult to keep pace with dental science and practice. Marketing has emerged as a skill every dental practice needs. What patients want and need puts increasing pressure on practitioners to keep pace. In short, as dentists we all need help,

the kind of help CDA provides as the national resource.

Today. **TOGETHER.**

The range, nature and speed of change are further indications of the importance of the dental profession working together. Strength comes not simply in sheer numbers but in the ability to forge consensus, to formulate policies, standards and guidelines and to plan and execute programs that enable the individual dentist to maintain his or her professional independence. Issues such as infection control, mercury toxicity, or GST, don't recognize political boundaries. We only have credibility, if we have a national voice. In short, national unity is as important to dentistry as it is to the country as a whole. The focus of such unity for the profession falls quite naturally to the CDA.

A **SENSE OF MISSION**

Authoritative voice. Resource. Focus of national unity. These are the essential roles to which CDA will direct its time, energy and resources in the years ahead in support of two fundamental principles: service to its members and advocacy for the optimal oral health of Canadians. All this adds up to a renewed, rededicated CDA, armed with new clarity of purpose and direction. It means that every member can expect CDA to provide continuing leadership and support in these challenging times.

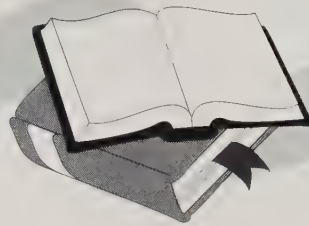
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1. Alty, C.T. "Unexplained rashes, wheezing may indicate allergic reaction to latex." *Dental Office*. Jul. 1992; 11(11):3-4.
2. Beezhold, D.H. "Latex allergy." *Biomedical Instrumentation & Technology*. May-Jun. 1992; 26(3):238-40.
3. Ber, D.J. and others. "Latex hypersensitivity: two case reports." *Allergy Proceedings*. Mar.-Apr. 1992; 13(2):71-3.
4. Cichocki, P.J. "Allergic reactions to powders used in latex gloves." [letter] *British Dental Journal*. Nov. 1990; 169(9):277.
5. Farli, M. and others. "Occupational contact dermatitis in 2 dental technicians." *Contact Dermatitis*. May 1990; 22(5):282-7.
6. Fay, M.F. and Sullivan, R.W. "Changing requirements for glove selection and hand protection." *Biomedical Instrumentation & Technology*. May-Jun. 1992; 26(3):227-32.
7. Field, E.A. and King, C.M. "Handcare for the dental team." *Dental Update*. Nov. 1991; 18(9):398-400.
8. Fuchs, T. and Wahl, R. "Immediate reactions to rubber products." *Allergy Proceedings*. Mar.-Apr. 1992; 13(2):61-6.
9. Gonzalez, E. "Latex hypersensitivity: a new and unexpected problem." *Hospital Practice*. (Off Ed) Feb. 1992; 27(2):137-40, 145-8, 151.
10. Hensten-Pettersen, A. and Jacobsen, N. "The role of biomaterials as occupational hazards in dentistry." *International Dental Journal*. Jun. 1990; 40(3):159-66.
11. Herod, E.L. "Contact dermatitis of the male genitalia due to latex gloves." *General Dentistry*. May-Jun. 1990; 38(3):221-222.
12. Liston, A.J. "Allergic reactions to latex in medical devices." *Canadian Journal of Infection Control*. Winter 1991; 6(4):101.
13. Oshima, H. and others. "Epidemiologic study on occupational allergy in the dental clinic." *Contact Dermatitis*. Feb. 1991; 24(2):138-9.
14. Settipane, G.A. "Latex allergy: another occupational risk for physicians." *Allergy Proceedings*. Mar.-Apr. 1992; 13(2):79.



15. Smart, E.R. and others. "Allergic reactions to rubber gloves in dental patients: report of three cases." *British Dental Journal*. Jun. 1992; 172(12):445-7.
16. Sussman, G.L. "Latex allergy: its importance in clinical practice." *Allergy Proceedings*. Mar.-Apr. 1992; 13(2):67-9.
17. Weesner, B.W. "Surgical glove related contact dermatitis." *Journal of the Tennessee Dental Association*. Jan. 1991; 71(1):15-7.

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Book Reviews

Parliamentary Opinions II Solutions to Problems of Organizations

By V. Schlotzhauer,
M.A. Banks, F.M. Riddick,
and J.R. Stipp

*American Institute of Parliamentarians
1992, Kendall/Hunt Publishing Co.,
Dubuque, 156 pages*

It would be difficult to estimate the number of dental meetings that take place in Canada each year. However, if the meetings of the various councils and committees that support the parent bodies were incorporated in this figure, the number of sessions could realistically total several hundred.

The eventual success of a meeting depends on careful planning and sound objectives. Most well run dental organizations, whether they are statutory or voluntary, are governed by constitutions and bylaws, which specify both their missions and their modes of operation.

Within those bylaws is a provision for a text of parliamentary procedure, which governs and guides the way each group conducts its meetings. In Canada, for instance, the Royal College of Dental Surgeons of Ontario and the Canadian Dental Association employ Sturgis, the Ontario Dental Association uses Bourinot and some depend on Robert.

These texts of parliamentary procedure are not uniform, although they are all complex. Most presiding officers and board chairmen, with a few obvious exceptions, have at best a less than comprehensive working knowledge of the rules of parliamentary procedure. For years, the American Institute of Parliamentarians (AIP) has responded to procedural questions and helped to clarify ambiguities through the pages of its *Parliamentary Journal*. A feature of every issue is "Parliamentary Opinions," which is produced by a committee of certified professional parliamentarians.

For varying lengths of time between July 1982 to 1991, the authors of this book all served as members of AIP's opinions committee. The 193 opinions included in the book are the product of that decade's work.

Dr. Margaret A. Banks is a recent chair of the committee. She was the law librarian at the University of Western Ontario for many years, and in my opinion is the Canadian authority in parliamentary procedure and practice. This should alleviate any concerns readers may have about the validity of the text. Notwithstanding the fact that AIP's executive offices are based in Indiana, Canadian interests, concerns, and practices are well recognized and understood.

The book is set up as a series of questions and answers. It presents the problem, or question – which generally has broad applicability – clearly and succinctly. The answer is consistently presented in an equally interpretable language. When the various parliamentary texts differ, the opinions provided in this book make reference to such variations.

The opinions are well organized for easy reference, with chapters on the deliberative assembly, the conduct of business, motions (form and use), quorum, voting, nominations and elections, officers and their reports (including minutes), boards and committees, bylaw (interpretation and amendment), and conventions.

Parliamentary Opinions II is a book that, along with whatever primary parliamentary text has been adopted by an organization, would be of great value to conscientious presiding officers. It should provide them with the information they need to conduct their responsibilities knowledgeably, effectively, efficiently, and correctly, thereby enhancing the value of the meetings they preside over.

Reviewed by:
Wesley J. Dunn, DDS, FADC
Professor emeritus, faculty of dentistry,
the University of Western Ontario

The Mount Sinai Medical Center Family Guide to Dental Health

By Jack Klatell, Andrew S.
Kaplan and Gray Williams, Jr.

*1992, MacMillan Publishing Co., New
York
304 pages, \$38.95 in Canada.*

This well-written book is a comprehensive lay persons guide to dental health. The authors' goal is to establish a more effective working relationship between patients and their dentists by encouraging patients to participate actively and faithfully in a program of dental self-care.

Part I, although relatively short, provides a good description of oral and dental anatomy, supported by several plain, clear diagrams. One of the chapters in this section may be particularly useful to the dental consumer, since it provides guidelines to the enigmatic problem of how to find and evaluate a dentist and/or specialist. The need for informed consent is also identified, although the discussion ends there.

The second main section in this book – Part II, Basic Professional Care – begins by emphasizing the value of prevention. Despite the importance of this topic, it is treated somewhat perfunctorily. A concise chapter on home care is included, however.

Unfortunately, in describing the usual initial dental consultation, the use of X-rays is dogmatically endorsed without discussion of the potential risks or benefits. For instance, the indication that bitewing films are routinely taken could be disputed. Similarly, professional cleaning and polishing, though often required, especially for adults, may not be necessary every six months as stated.

This section also includes advice on first aid for dental emergencies. Another chapter reviews several techniques used to overcome dental fear, which may be of particular interest to people who need reassurance that dental treatment is "virtually painless." The next chapter discusses, appropriately, the control of pain.

Standard operative dentistry procedures and materials are clearly presented as well, but the description of dental decay is inadequate. Very little emphasis is placed on the importance of fluoride, which can enhance the remineralization of the early, uncavitated carious (white spot) lesion.

In common with many other texts, the book's discussion of the etiology of periodontal disease places relatively heavy emphasis on obscure factors, as compared to its short reference to the

role of dental plaque and the age of the patient or population. Similarly, considerably more discussion is devoted to the treatment, rather than the prevention, of periodontal conditions. Separate chapters present special aspects of dentistry for children and older patients.

Part III — Advanced Professional Care — is the lengthiest section. It provides information on various aspects of established specialty procedures, such as endodontics, maxillofacial surgery, and orthodontics. It also provides descriptions of a number of the therapies that are currently in vogue, such as implants, esthetic dentistry and the treatment of temporomandibular joint disorders. Significantly, perhaps, a chapter on the "Economics of Dental Care" is included, which attempts to inform patients of their right to know about a proposed treatment, as well as how to complain and how to avoid fraud and quackery. It also provides a clarification of dental insurance plans and other mechanisms of funding dental care.

Considering the current public awareness and sensitivity about the possibility of cross-infection in the dental office, the chapter on "Medical Conditions That Affect Dental Treatment" could have benefited from an extended discussion on infection control.

The final part of the book serves as a compendium of oral pathology. In spite of the numerous contributors to this text, it is clearly written and supplemented by good diagrams and black and white photographs. The dental academician may feel frustrated by the lack of citations, particularly with regards to supporting several dogmatic statements related to some traditional but outdated concepts of dental care. However, the intended readership is the dental patient, who will be well served by this reference book. Still, it should also be valuable to dentists and members of their staff who use it as a guide for communicating with patients.

Reviewed by:

*David W. Johnston, BDS, MPH,
Chair, Division of Community Dentistry,
University of Western Ontario*

The Emergent Reality of Heterosexual HIV/AIDS

By Sydney J. Lachman

4th edition, Lennon Limited, South Africa
396 pages, \$75 plus postage and tax

This text updates the 1991/92 edition of the author's original 1988 opus, and as such it is an excellent primer and in-depth overview for medical practitioners and health care workers. The book is divided into 12 sections, which contain numerous analytically perceptive essays on HIV- and AIDS-related topics. Included are papers on: epidemiology and the extent of the AIDS problem; can the AIDS pandemic be contained?; pathogenesis of the disease caused by HIV; opportunistic infections associated with AIDS; clinical spectrum of AIDS patients and those persons infected with HIV; major diseases associated with AIDS; strategies in prevention and treatment; vaccines; the drug approach; population subgroups at risk; HIV/AIDS in infants, children and adolescents; ethical and therapeutic dilemmas and economic considerations.

This well-written book is a treat to read. Information is presented elegantly

in a logical, progressive and perspicacious manner. The book is thoughtfully produced, printed in bold type and superbly referenced. In addition to factual biological, clinical, therapeutic and psychosocial data, it provides an analytical interpretation, as well as the interrelating significance, for each subject. Concepts and facts are appropriately synthesized, and are ranked according to the subject of interest. There is little or no repetition of material.

One minor complaint is the notable absence of illustrations. This is a minor weakness, however, and does not undermine the book's effectiveness. This book is enthusiastically recommended to all health care workers.

Reviewed by:

*L.Z.G. Touyz, BDS, M.Sc. (Dent),
M. Dent (POM)
Director, Periodontology,
McGill University*

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**The Chair, Prosthodontics Search Committee
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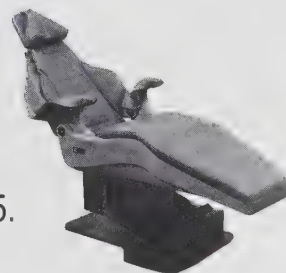
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of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 59 No. 3
March/Mars 1993

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The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.

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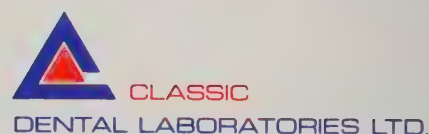
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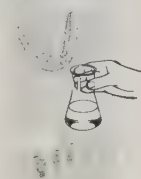
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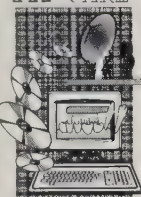
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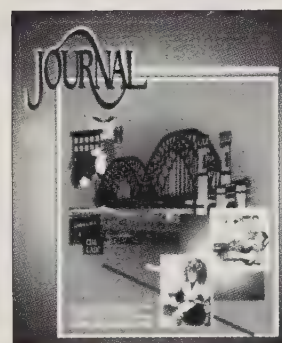
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On our Cover:
"A Bridge to Practice Success".
Illustration by Louise Després Jones.

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CDA LIBRARY

CDA Library – Dentistry's National Information and Resource Centre

Throughout the '90s, the dental profession will be faced with exciting new challenges and technological advances. The successful dental practice depends a great deal on keeping abreast of the new dental techniques, clinical research and issues affecting dentistry today. CDA is committed to helping our members keep pace with the rapidly changing world of dentistry.

The CDA library is dentistry's national information and resource centre – offering the most up-to-date and relevant oral health information available. Responding to thousands of queries from CDA members annually, librarian Martha Vaughan and her staff gather, compile and distribute information on dental news, research and activities from national and international sources. Canadian dentists have come to rely on CDA for their information needs. Give us a call today!

CDA Package Library

Every month, a "package library" is compiled on new and vital topics of interest to dentists. Gathered principally from Medline, our medical/dental computer database, the packages contain 25 to 30 items of information on the highlighted topic – from articles to guidelines. Each month's package library is available to members for just \$5 plus tax. The package topic for March is:

Dental Porcelain and Ceramic Crown and Bridges

A sample of the package's contents includes:

- "Forecast for crown and bridge in the '90s and beyond," by G.A. Schoenrock (*Dent Today* Sept. 1990: p. 44).
- "The all-porcelain, resin-bonded bridge," by M. Kern and others (*Quint Int.* Apr. 1991: pp. 257-62).
- "Procera: a new concept in crown and bridge," by H.J.

Maier (*J Can Dent Assoc* Dec. 1991: pp. 985-988).

- "Etched-retained porcelain laminate bridges," by J.F. Reid (*Restorative Dent* May 1990: pp. 15-8).

A complete list of previously published packages is available on request. Other package topics include: chlorhexidine, halitosis, fluoridation, tooth bleaching and burning mouth. Tailored medline searches – provided FREE to CDA members – can address all your professional information needs. Please call for more information.

Acquisitions

Each month, the library receives a number of new books. Members can borrow these books for \$5 plus tax. The loan period is one month, which can be extended as long as no one else is waiting for the book.

Call today to reserve your copy of these recent acquisitions:

- *Dental implant prosthodontics*, by Wayne C. Caswell: Lippincott, 1991; 384 pgs.

This text presents the prosthodontic concepts for the restoration of osseointegrated implants. A variety of implant systems is presented including the Branemark system and the IMZ system. In addition, hydroxyapatite augmentation is addressed for the patient who cannot have implants. One chapter discusses periodontal hygiene and home care.

Additional information on dental implants can be obtained by contacting the CDA library. We have a variety of books, videos and package libraries available on this topic.

- *Atlas of craniofacial trauma*, by Robert H. Mathog: W.B. Saunders, 1992; 561 pgs.

This atlas describes a series of methods used in the analysis and treatment of craniofacial injury. The text is divided into 13 parts, with a total of 109 chapters, and includes discussions on emergency measures, mandibular and maxillary fractures, nasal and frontal sinus fractures, and laryngeal and soft tissue injuries. Many procedures are de-

scribed with diagrams.

- *Cranio-mandibular disorders: Guidelines for evaluation, diagnosis and management*.

The American Academy of Cranio-mandibular Disorders: Quintessence Publishing Co., 1990; 54 pgs.

This book is a consensus paper of the American Academy of Cranio-mandibular Disorders. Two earlier consensus position papers on the same topic by McNeill et al (1980) and McNeill (1983), published in *J Prosthet Dent*, are referred to in the text, and are also available. The text is divided into eight brief chapters on the evaluation and management of cranio-mandibular disorders, with a final section on recommendations.

The library collection is automated, allowing CDA members to obtain a list of the books available on a particular subject before making a request for a specific book.

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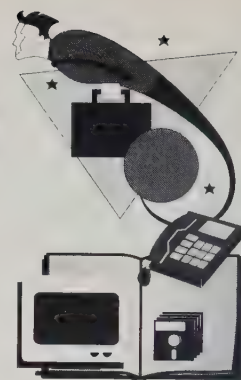
This month, the library wishes to thank:

- * **Dr. Kevin Roach**, for his generous contribution to the Library Trust Fund.
- * **Dr. Douglas Vandahl**, for donating textbooks and journals to our library collection.
- * **Dr. Arthur Wood**, for graciously contributing videos on sports dentistry, an increasingly popular subject in preventive dentistry.

For more information or to reserve your package library, call Martha Vaughan or Marsha Maslove at: 1-613-523-1770, ext. 223, or call toll free: 1-800-267-6354, or fax: 1-613-523-7736.

The library is open Monday to Friday between 8:30 a.m. and 4:30 p.m.

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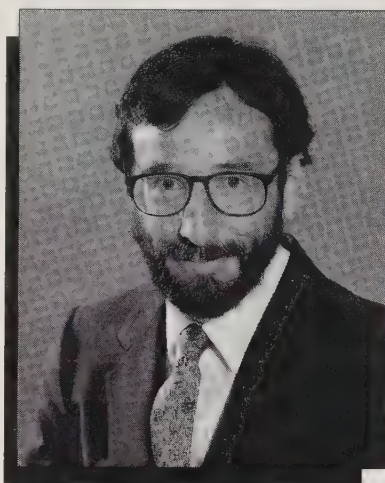


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New And Improved *Journal* and *Communiqué*



Terence L. Davis, BA
Managing Editor

In case you missed the fine print on the cover, or skimmed over the masthead page, yes, the magazine you're reading is the *Journal of the Canadian Dental Association* – a redesigned, more exciting, easier-to-read, make-way-for-the-'90s *Journal*.

And, if you're a CDA member, yes, that 20-page insert you just pulled out of your *Journal* is really *Communiqué*. And, yes, the new-look *Communiqué* is nothing like the old *Communiqué* at all. Much, much more than the design has changed.

In both cases, the changes are part of an ongoing evolution that began in February 1984 – with a redesigned *Journal* – and picked up speed in January 1985, when CDA past-president Dr. P. Ralph Crawford became the magazine's editor.

At the time, the *Journal* was in trouble. Its readership was down, its costs were up, and it was no longer meeting the needs of Canadian dentists. Dr. Crawford's mandate was to turn things around.

The key, Dr. Crawford believed, was to publish more clinically-orientated articles, and to illustrate as many of those articles as possible with color photographs. He wanted to reach the general practitioners, the wet-gloved dentists who make up the bulk of CDA's membership.

To achieve this goal, Dr. Crawford had to overcome two significant obstacles – a lack of good clinical material and a lack of money (using more color meant higher printing costs). The redesigned *Journal* you received this month is a testament to the success he has enjoyed in both areas over the past eight years.

The money problem was solved by adding a designer to the *Journal's* staff, Louise Després Jones. In two short years, Louise has saved the association thousands of dollars by bringing the *Journal's* production in-house. The magazine is now produced on CDA's desktop publishing system.

Louise is also responsible for the *Journal's* new design. The magazine's new look is her conception, from start to finish, as is the design of the new *Communiqué*.

Now in its 14th year of publica-

tion, *Communiqué* has evolved from being a news bulletin into a full-fledged member newsletter. With the latest edition, CDA has taken this process one step further, however, by adding clinical articles by high-profile authors to the usual mix of dental news and information. Our intent is to make *Communiqué* more exclusive. We want it to be a benefit that our members value, and one that they look forward to receiving.

If you're a CDA member, you will now receive the newsletter six times per year – rain or shine – as an insert in the *Journal*. *Communiqué* will not be available to non-members.

CDA's decision to maintain the exclusivity of *Communiqué* reflects the new mission statement that the association adopted last year. We are the "authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada – dedicated to meeting member needs."

We hope you like the new-look *Journal* and the revamped *Communiqué*. Please drop us a line to let us know what you think about the new format of both publications. We're here to serve you and your profession.

Terence L. Davis, BA
Managing Editor



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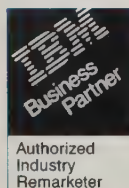
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BRIDGE OVER CHANGING TIMES



Dr. P. Ralph Crawford,
Editor

This month, CDA will launch an exciting new program to assist senior dental students with career planning and help new graduates get started in the business of dentistry.

A cooperative undertaking with ExperDent Consultants of Burnaby, British Columbia, *The Bridge to Practice Success* is built on a one-day practice management seminar that will be offered at different locations across Canada. Seminar participants will be taught how to evaluate the potential of various practice management alternatives to help them achieve their personal and financial goals.

The reason for launching the new program is simple. These are troubling times for dentistry, and they are particularly difficult times

for the new graduate. Never in the history of the profession has it been more difficult to launch a new practice. The incidence of dental disease has never been lower (much to our own credit), and discretionary spending, despite continued assurances that the recession is over, is still way down.

It was different when I graduated from the University of Manitoba in 1964. The faculty of dentistry – the first new dental school to be established in Canada in over 40 years – was still in its infancy then. Dentists were graduating from Canada's six dental schools in record numbers, four new dental schools were on the way, and new graduates were moving easily and successfully into busy practices.

A conversation I overheard in the university's locker room 30 years ago tells it all. Said one senior student to another, "I think I'll put a blindfold on and throw a dart at the map of Winnipeg. Wherever it hits I'll open an office, and the public will kick the doors down to get at me."

Nor was this student's facetious comment far wrong. On graduation, I associated with an established dentist. He had me booked three weeks in advance with eight patients a day. (I'd never seen more than three patients a day at dental college, even when the clinic was busy.) And no matter how hard or long I worked over the next 25 years, there was never enough time to see all the patients who called to make appointments.

But times change, and there isn't a lot that mankind can do about it. We can only adjust and adapt, or develop new strategies. Fortunately, CDA has been meeting change head-on for more than 90 years.

It is what we did in the early 1970s, when we created our council on student affairs and brought dental students directly into the fold of organized dentistry. CDA was the first dental association in the world to grant students full voting rights on its governing board. In

effect, we gave students a platform to air their views and concerns.

Similarly, in the 1980s, when another period of recession gripped the country, CDA reinforced the practice management programs offered at Canada's dental schools by publishing a "how-to" dental practice management manual.

With *The Bridge to Practice Success*, CDA is undertaking its most ambitious program ever to help senior students, new graduates and young dentists succeed. ExperDent's Imtiaz Manji and Tom Snyder, the seminar leaders, are both highly-renowned in the practice management field. They have the knowledge and skills that new graduates need to prepare themselves for those first difficult years in practice.

To build on the information presented in the seminar, ExperDent has developed a unique practice management guide. *Getting Started in Dentistry: Your First Five Years* looks at private practice from a "real-world" perspective. It not only illustrates the strengths and weaknesses of alternative practice management strategies, it also demonstrates the consequences of using the wrong approach.

In this month's special practice management issue of the *Journal*, Imtiaz Manji, Wayne Halstrom and Jack Stockton capably illustrate that getting started in the dental profession, or establishing an associateship, is certainly not what it was 30 years ago. However, we are confident that when the *Journal* seeks out writers of this stature, and combines their expertise and guidance with CDA's innovative endeavors, the bridge over changing times will be that much easier to cross.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the*
Canadian Dental Association

JOURNAL

March/
Mars
1993
Vol. 59
No. 3

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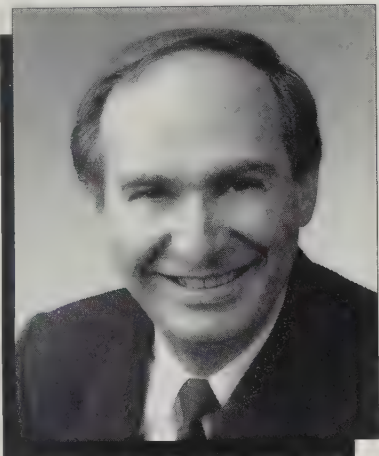


Product Information on page 291

3M

PRESIDENT'S COLUMN

Science Before Washers and Driers



Dr. Bernard Dolansky,
President

Most Canadian dentists would be surprised to come across a Maytag exhibit at a CDA or provincial dental meeting. But unless reason prevails, not only Maytag but also General Electric and Inglis will probably ask for booth space in the not-too-distant future.

The idea of marketing washers and driers on the floor of a dental convention may seem ludicrous. But it's already happening in the United States. Believe it or not, clothes washers and driers were on sale at the ADA convention in Orlando last October.

This vignette offers a good illustration of the different approaches that the American and Canadian governments, as well as health care establishments, have taken on the issue of infection control – despite having similar goals.

CDA's approach has been to develop and recommend universal infection control guidelines and a code of ethics. These guidelines are based on the latest scientific evidence. Public perception has to

play a part in what we do, but it is not the overriding concern. Our guidelines don't even suggest that dental personnel must either wear completely disposable clothing or launder their clothes within the dental office. Why should they, when there is no scientific proof that such an approach would increase patient safety?

It is conceivable that the Canadian public and their elected representatives will one day follow the example of their neighbors to the south, and overreact to the media and political hype that has developed around the question of infection control in the dental office. This is a real danger, particularly when the public is so concerned – and yet so uninformed – about HIV and AIDS.

As dentists, we must not bow to unreasonable pressure. We must base our decisions on science, while continuing to fulfil our mandate to inform and educate the public. We shouldn't, for example, lose sight of the fact that HBV is one hundred times more infective than HIV, even though it has never been a media "crisis" of the month. At the same time, however, we must also remember that the dental office should not be a vector for the transmission of *any* disease – not even the common cold.

To this end, CDA has developed and produced a new infection control manual, which will be released during our interim board of governor's meeting in May. The manual takes CDA's infection control guidelines one step further, by presenting them in a how-to format. What it doesn't do is stray beyond the bounds of science. For example, while public attention has lately been focused on the issue of handpiece sterilization, CDA's infection control guidelines still state that high-level disinfection can be used on nonsterilizable handpieces. The use of sterilizable handpieces is strongly recommended but it isn't demanded – because there is still no scientific evidence to support such a demand.

As a sympathetic practitioner, I have a responsibility to ensure a safe, comfortable environment for my patients, my staff and myself. As a dentist practising in the media age, I also know that infection control is sometimes as much an exercise in public relations as it is a matter of science. To that end, I will continue to employ universal precautions, including the use of only heat sterilized or disposable instruments and materials for all my procedures. In short, I will continue to follow CDA's Infection Control Guidelines.

To date, I have every reason to believe that both the public and the government are satisfied with what CDA is doing on the infection control issue. Therefore, it is particularly disappointing that the only criticism we have received in regards to our activities in this area has come from within our own profession. Some dentists seem to forget what our guidelines recommend – namely the use of either sterilization or disposable instruments and materials – and focus instead on the divergent views that have been expressed as part of the ongoing scientific debate taking place in our *Journal*.

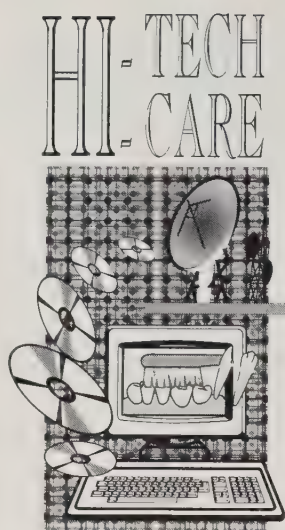
These dentists don't want to hear any dissenting opinions. But we should be proud that our profession has advocated safe dental environments, while at the same time fostering healthy scientific debate. If I have learned anything in this life, it is that no one person has a monopoly on the truth – scientific or otherwise.

As dentists, we know that our profession requires its practitioners to possess a mixture of scientific knowledge, technical skills, public relations and business sense. Infection control, as an integral part of dentistry, must be viewed in the same way. The worst thing that any of us can do is to close our minds on this or any other subject.

*Bernard Dolansky, BA, DDS, MS
President of the Canadian Dental Association*

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Overcoming Computer Phobia

Barry Freyberg, DDS

In the roaring heydays of dental computer development, any hacker with a computer and a little business savvy could set up shop as a dental systems vendor (even with no knowledge of dentistry) and expect to be successful.

However, as the computer field became more competitive, many of the original fly-by-night operations matured into solid, reputable companies. Today, most of their systems have been tested in the marketplace by generations of users, who identified the special quirks of each package and encouraged the development of new features.

In some ways, competition has simplified the computer selection process. Many of the surviving vendors have made a commitment to system development and customer support. Despite this, computers are an unknown and forbidden territory for many dentists. And choosing the wrong software system can be costly, in both time and money, as well as causing considerable patient and staff frustration.

The best decisions are guided by an understanding of how each system can meet the practice's unique concerns and enhance its personality. Computer systems can be divided into three fundamental categories: basic, intermediate and advanced. **Table I** lists the features of each system type. To fit into a specific category, a system should

have at least 80 per cent of the features listed for its type.

Basic Systems

Basic systems contain the essential features necessary for the smooth operation of an automated practice. In fact, if a system doesn't possess these crucial features, using it can be crippling.

With the choices now available in the dental marketplace, no practice should consider buying a system with less than basic features. For starters, the system should include a patient information screen that displays the patient's name, address, phone number, recall date, date of first visit and referral source. In addition, the system must be able to track and remind the practice of medical alerts, as well as generating treatment plans, statements, insurance benefit estimates, and insurance claims and predeterminations. It should be possible to send recall notices on the system. Word processing is a basic feature, but be prepared for limitations.

Even a basic system should be able to produce well-designed reports and generate important management information. The 11 reports that no system should be without are:

- Gross practice production
- Revenue and collection
- Overdue patient and insurance accounts

- Overdue insurance claims
- Overdue recalls
- Overdue predeterminations
- Unbilled insurance procedures – this report identifies any treatment that has been completed, but not billed to the insurance company.
- Incomplete dentistry – a listing of treatment that has been presented but not completed within a certain time span.
- Lost patients – patients that have not been into the practice within a specified time period (i.e. a year)
- New patients
- Elementary tracking of referral sources

Even a system with only one terminal needs to be multi-tasked. It should also possess multi-user capabilities and allow for future software or hardware expansion. Audit trails add accountability by identifying when specific tasks were completed and which team member carried them out. Software security features should restrict access to specific features of the system. For example, you may prefer to limit the number of staff members who can make adjustments to patient accounts or view payroll information.

All systems should possess both a modem and the ability to submit claims electronically. Using a modem, a practice can take advantage



of on-line software support directly from the computer vendor and have access to any present or future off-site databases. Electronic claims processing has taken a large step forward with the development of EDI and the CDAnet program. Practices that are unable to submit claims electronically risk losing patients to practices that offer a faster return on insurance benefits.

Intermediate Systems

Practices that are upgrading from a basic system or need more sophisticated features may wish to purchase an intermediate system. The difference between intermediate and basic systems lies in the diversity and sophistication of the built-in features. Intermediate systems have fewer limitations and greater capability for customization.

Interoffice communications are also much more advanced with intermediate systems. For example, the receptionist can send a message from her terminal to the operator terminal stating that the next patient has arrived. Similarly, the assistant can key in a response on her terminal, informing the receptionist that the doctor is running behind schedule and that she should prepare the patient for a short wait.

Another advantage of intermediate systems is that treatment plans can be presented in laymen's terms. The system can divide treatment plans into phases, indicate insurance coverage, and provide several options for patient statements. In addition, insurance estimates should be more accurate, as the system can learn about each insurance company's fee schedule. It should be capable of sending and receiving instant or batched insurance claims and predeterminations. And with a minimum of keystrokes, the word processor should produce instant or batched letters, while keeping track of the letters that have already been sent.

Intermediate systems provide the same reports as basic systems, but freeform text can be easily added. Practices can create their own customized reports, and capi-

TABLE I

Features Available With Three Computer System Types

	Basic	Inter.	Advan.
Basic information screens	•	•	•
Track and remind about medical alerts	•	•	•
Print treatment plans	•	•	•
Generate statements	•	•	•
Approximate insurance benefits	•	•	•
Generate insurance claims electronically	•	•	•
Generate pre-determinations	•	•	•
Electronic insurance claims	•	•	•
Reports			
Gross production of the practice	•	•	•
Revenue and collection	•	•	•
Overdue patient and insurance accounts	•	•	•
Overdue insurance claims	•	•	•
Overdue recalls	•	•	•
Overdue predetermination	•	•	•
Unbilled insurance procedures	•	•	•
Incomplete dentistry	•	•	•
Lost patients	•	•	•
New patients	•	•	•
Tracking referral sources	•	•	•
Audit Trails	•	•	•
Software security	•	•	•
Multi-tasked and multi-user capabilities	•	•	•
Basic word processor	•		
Modem capability	•	•	•
Interoffice communications		•	•
Multiple treatment plan options and phases		•	•
Detailed patient statements		•	•
Accurate insurance estimates		•	•
Multiple treatment plan options and phases		•	•
Instant insurance claims and pre-determinations		•	•
Custom and capital reports with free text editing		•	•
Advanced word processor		•	•
Patient coding and tracking		•	•
Automatic Reminders		•	•
Group Practice features		•	•
Clinical applications under development		•	
Reduced paper practice			•
Telemarketing			•
Automatic task completion		•	•
Automatic Scheduling			•
Progress notes			•
Clinical applications have been added			•



tal reports should be available. Overdue treatments can be easily tracked and automatically entered into reports and letters.

This type of system can also code patients and track them. For example, patients with young children could be coded by the child's age. When the child becomes old enough for dentistry, the practice could send a birthday card encouraging a first dental visit. Automatic reminders should be built into the system to notify the practice of necessary tasks, and some tasks should be completed automatically. For example, after a new patient's first visit, a letter to the patient's physician could be automatically generated, asking if there are any specific medical concerns.

The specific features of intermediate systems make them the minimum type of system that a group practice should consider. Ideally, the selected system will offer automatic revenue distribution and a powerful electronic scheduler. The vendor should also be developing

or planning to add clinical applications to the program.

Advanced Systems

The introduction of computers to dentistry was accompanied by sweeping predictions of a paperless office, but this was precluded by hardware and software limitations. While a paperless office is still a futurist concept, recent advances in dental software and hardware have made reduced-paper offices a reality.

In addition to having all of the features of intermediate systems, advanced systems have excellent telemarketing capabilities (also called telemanagement). The computer automatically lists who should be called that day and for what reason. This reduces the number of human errors and oversights that frequently occur when staff search through reports manually. It also eliminates the need to print each and every report.

In this way, advanced systems can complete many tasks without

staff intervention, and help the practice run more efficiently. Chairside terminals allow automatic scheduling from anywhere in the practice, and even electronic progress notes are possible. Clinical applications, including patient charting and radiovisiography should be available, with further features under development. These systems should also be capable of storing data indefinitely, without affecting their speed.

Whether basic, intermediate or advanced, your future system should be easy to learn and enjoyable to use. By selecting a user-friendly system with the right features, you, your patients and your staff will enjoy all the benefits an automated practice can offer. ■

Dr. Barry Freyberg is a full-time general dentist, a consultant and one of the foremost lecturers on automation in dentistry. A fellow of the academy of General Dentistry and the International College of dentists, he is also a recipient of the Hinman Medallion.

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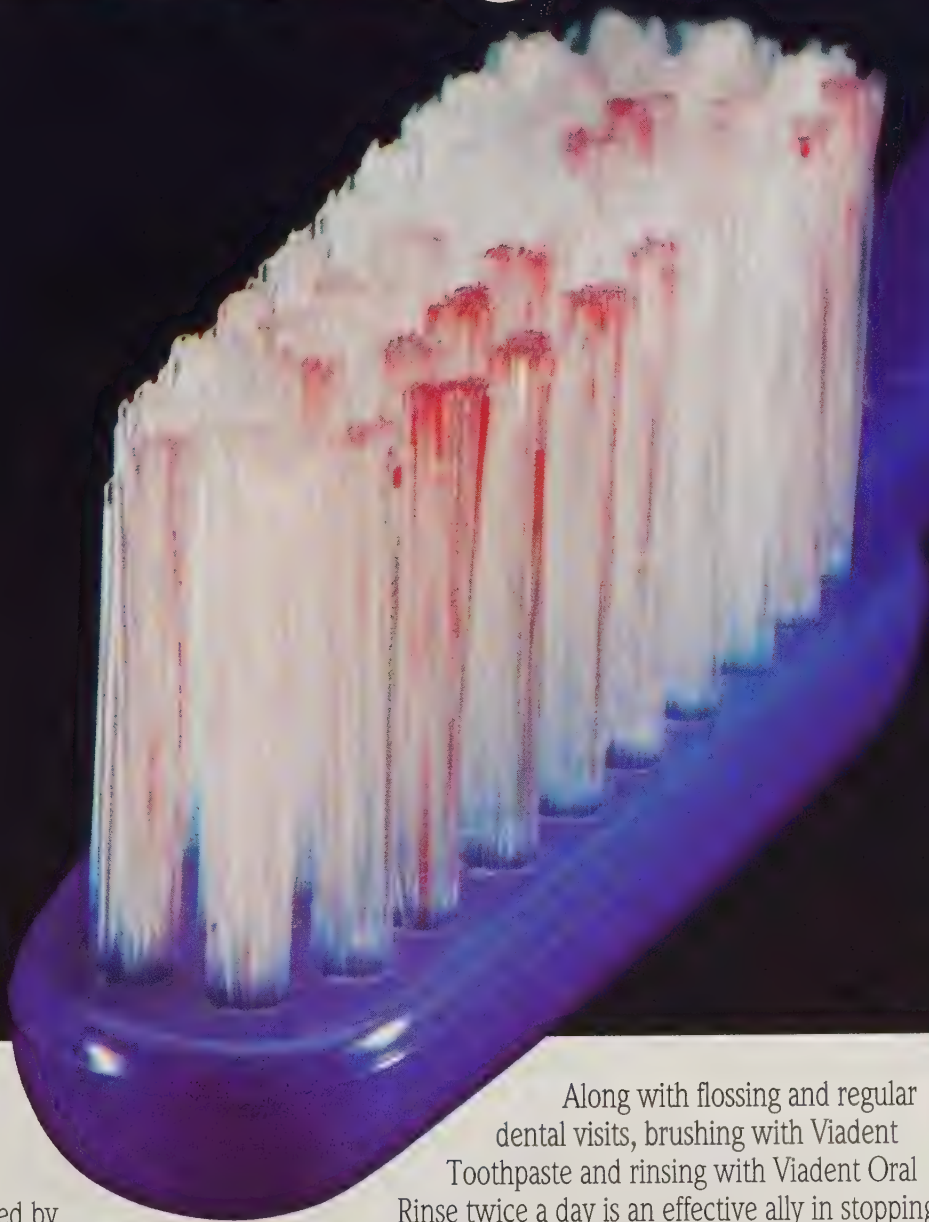
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References:

1. Hanna JJ, Johnson JD, Kufnec MM. Clinical evaluation of sanguinaria-containing toothpaste and oral rinse. American Journal of Orthodontics and Dentofacial Orthopedics, 1989, Vol. 3: 199-207
2. Harper DS, Mueller LJ, Fine JB, Gordon J, Laster LL. Clinical efficacy of a dentifrice and oral rinse containing sanguinaria extract and zinc chloride during six months of use. J Periodontol, 1990; 61: 352-358





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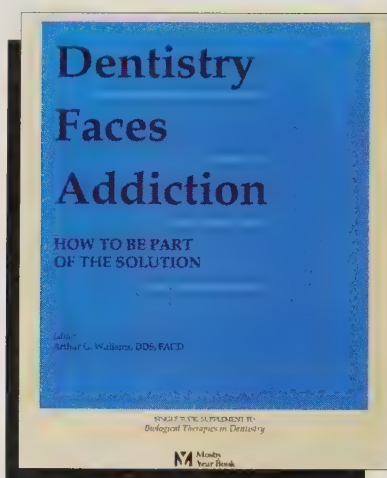
When it comes to infection control, what worked yesterday may not be the best solution today. Gone are the guidelines of the past, replaced by a completely different set of rules. The times demand new design technology, new materials and new manufacturing methods. It's with that challenge that A-dec welcomes you to a new age in dental equipment. Presenting Cascade.™ Now for the first time, Cascade combines all the elements of cleanability, versatility and the latest in technological innovations into a completely integrated system. It's a whole new approach to the design of operatory equipment, featuring new handpiece controls.

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CASCADE 

NEWS UPDATE

"Dentistry Faces Addiction" Published



After more than four years of preparation and struggling for support, Dr. Arthur G. Williams of Florida has finally seen his significant journal, *Dentistry Faces Addiction, How To Be Part of the Solution*, published by Mosby-Year Book, Inc.

In 1988, Dr. Williams, then the editor of the *Journal of Dental Practice Administration*, perceived a need to educate the dental profession on substance abuse, a condition that has the potential to affect as many as 15 per cent of Canadian dentists.

Initially, Dr. Williams believed this need would be met by publishing a few articles on substance abuse in each quarterly issue of the *Journal of Dental Practice Administration*. When he began to gather material for the first set of these articles, however, he quickly realized that a much more expanded publication was required.

But Dr. Williams also realized that a journal on substance abuse would have little impact if it wasn't read. The key, he believed, was to distribute the publication to as many dentists as possible, free of charge. So he began the long, hard, and often exasperating task of searching for funds.

Dr. Williams' determination was rewarded when the American

Fund for Dental Health, American Dental Association, American Academy of Dental Practice Administration, A-Dec, Inc., Block Drug, Christopher D. Smithers Foundation, Colgate-Palmolive, Johnson & Johnson, J.B. Lippincott, Oral-B, Organization of Teachers of Dental Practice Administration, The Prudential, Unilever Research, Warner Lambert, Marworth Chemical Dependency Treatment Centers and the U.S. Bureau of Health Professions all agreed to sponsor the project.

The resulting 120-page soft-cover journal contains personal stories from dentists affected by alcoholism and/or drug abuse, as well as technical articles on alcohol, cocaine, marijuana, nicotine and nitrous oxide. It also covers intervention, recovery, relapse, Alcoholics Anonymous and Al-Anon, and thoroughly details how to recognize chemical dependency in the dental practice or the drug-dependent patient. A discussion of advocacy issues and dental school help programs is complemented by a complete list of books, hot-line telephone numbers and other resources.

Despite limited funding, *Dentistry Faces Addiction* has been distributed free of charge in the United

States, to dental school administrators, dental school libraries and state boards.

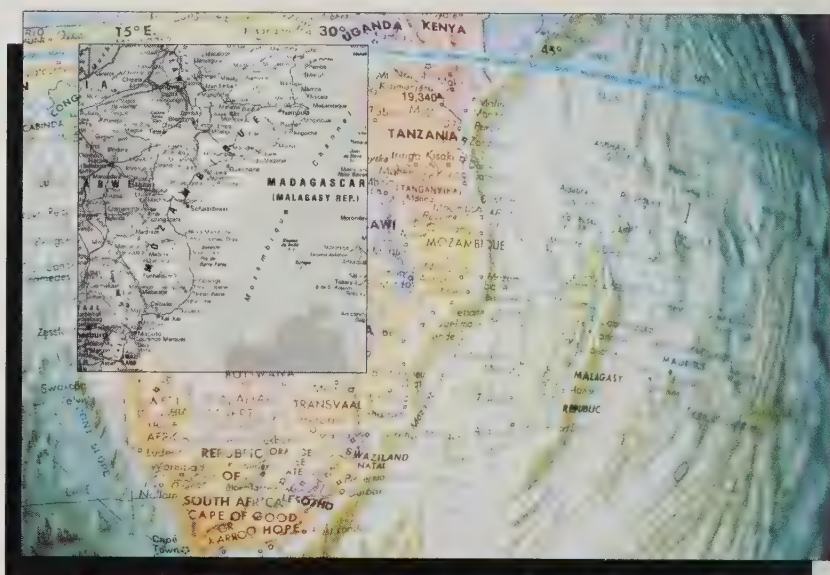
Copies of the journal are available for \$8 each by writing Mosby-Year Book, Inc., Journal Subscription Services, 11830 Westline Industrial Drive, St. Louis, MO, 63146, U.S.A. Or call (314) 872-8370, ext. 4351, or fax, (314) 432-1158. ■

Dental Project Receives \$1 Million From CIDA

A project to train primary oral health care teachers in Mozambique has received an additional five years of funding.

Offered by the college of dentistry at the University of Saskatchewan, the first, three-year, phase of the project ended in March 1992. Its second, five-year, phase will cost approximately \$1.25 million. The Canadian International Development Agency (CIDA) will contribute 81 per cent of this cost, while the University of Saskatchewan and Mozambique will contribute the remaining 19 per cent through in-kind donations.

Coordinated by Dr. Murray Dickson, the project is designed to



Mozambique's location on the African continent. In the upper left hand corner is a close-up of the country.

help more Mozambican dental therapists to become teachers, as well as helping both them and their tutor colleagues to develop courses and continuing education workshops in Mozambique, one of the poorest nations on earth.

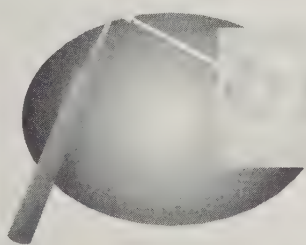
Canada became a pioneer in Third World dental aid in 1985, when it funded a three-year program to train 17 Mozambicans as dental therapists. The program was offered by the National School of Dental Therapy in Prince Albert, Saskatchewan.

Currently, two students from Mozambique are studying at the college of dentistry in Saskatoon. Two University of Saskatchewan students, Keith King and Shaun Brakstad, travelled to Mozambique in February as part of the college of dentistry's senior year option program.

Located on the southeast coast of Africa, Mozambique, with a population of over 14 million inhabiting a land mass just slightly larger than New Brunswick, tops the Populations Crisis Committee's "scale of human suffering." Torn by internal strife, civil war, drought and poverty, the country's dental ratio is 1:2,000,000. ■

CSA Publishes Laser Standard

The Canadian Standards Association (CSA) has published a comprehensive new standard on laser technology, *Laser Safety in Health Care Facilities*.



Containing over 60 pages, standard CAN/CSA-Z386-92 was developed using the consensus system, which involved participation from industry, government, and biomedical engineering representatives, as well as patient care providers.

Designed for use in health care facilities ranging in size from private practice dental offices to large hospitals, the book is a resource for planning, setting up and operating laser systems. It provides engineering, administrative and operating procedures to safeguard patients and staff from the potential hazards of lasers.

All aspects of managing lasers are covered, including: the purchase of a laser; the installation, maintenance, and testing of laser equipment; the recognition and minimization of laser beam and non-beam hazards; the selection of appropriate personal protective equipment; the establishment of a laser safety committee and laser safety officer; and the training of health care staff and service providers.

CSA is recognized throughout the world for its work in standards, certification and testing. *Laser Safety in Health Care Facilities* is available for \$70 by contacting the Standards Sales Group, Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario M9W 1R3, or calling 416-747-4044, fax 416-747-2475. ■

Norwegian Scientists Operate Tooth Bank



A group of Norwegian university scientists has set up the world's first "tooth bank," according to a story published in the Academy of General Dentistry's *Dentalnotes*.

Bergen University researchers are using primary teeth to learn more about the nature and effects of pollution. After being ground to dust, each tooth is analyzed to de-

termine its lead, zinc, cadmium, copper and mercury content.

To date, the tooth bank has collected over 10,000 teeth from children in Norway, Chile, Poland and Thailand. New teeth are needed to provide more information, and extend the study to other parts of the globe.

Primary teeth should be sent to Gisle Fosse, Professor of Anatomy, Bergen University, Asrstadveien, 5009, Bergen, Norway – with the "Good Tooth Fairy's" permission, of course. ■

Partners In Health Sought For Ukraine

The Canadian Society for International Health (CSIH) has launched a Partners in Health program that will place volunteer health professionals with host organizations in the Ukraine.

Under the program, participating health professionals will share their expertise with Ukrainian professionals, providing them with the skills they need to develop and strengthen the Ukraine's human resources and health care organizations.

Partners in Health was initiated in September 1992, when a CSIH delegation met with officials from the Ukrainian Ministry of Health, health institutions and agencies to discuss the country's health care needs and how Canadians could get involved.

A number of primary health care needs were identified, including: health financing systems; education of health professionals; health status and epidemiological systems; practice standards of health practitioners and organizations; independent health associations; and women's health. Secondary areas of need include environmental health services and AIDS related services.

The operational goal of the Partners in Health program is to place 40 health care professionals in the Ukraine during the next 15 months. These placements are expected to last from two to six months, each.

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EXAN

GEARING UP FOR THE 21ST CENTURY

The company that pioneered computerization in the Canadian dental industry 12 years ago has recently undertaken several new initiatives to assure that Exan Technologies Inc. continues to be an industry leader throughout the '90s.

Exan recently announced the development of a new, full-featured, single-user system called Pro-Dent, which sells for \$3,988. It is fully upgradable to the popular Dentex multi-user system, and Exan is so excited and confident about this new system, it is offering it with a money-back guarantee.

In October 1992, Exan announced an important new partnership with Ash Temple Ltd., one of Canada's largest dental-supply organizations. As per the agreement, Ash Temple's 95 sales representatives nationwide have undergone extensive training and are able to:

- promote and sell Exan's new Pro-Dent dental practice management solution;
- provide doctors with a presentation of the software system using Exan's new CD ROM technology and video;
- give full, in-person demonstrations of this exciting technology.

This combining of forces gives Exan a unique opportunity to showcase its products all across the country, using the experience and expertise of Ash Temple's knowledgeable and well-trained staff.

In addition to broadening its sales base, Exan has combined and expanded its service, training and support capabilities. Utilizing the industry's most sophisticated service-control system, it is able to offer comprehensive service support throughout Canada. With this system in place, it is guaranteed that all of Exan's clients are highly trained on the software and only a phone call away from help with any problem that may arise.

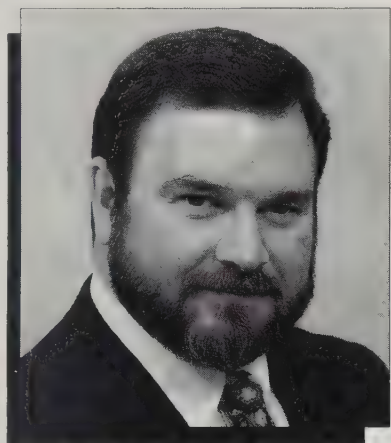
After an extensive study of practice management computer systems across North America, a prominent U.S. consulting firm concluded that Exan's system is the most comprehensive and flexible one available, and it offers the features most often requested by growing dental offices. Exan refused to sit back and relax after such a glowing endorsement. Instead, it released its newest version of Dentex software at the start of the year. The program has new-look windowing and a vast array of special enhancements, more than ever before included in a single release.

Following close on the heels of that project is a new generation of dental software. For 1993, Exan has budgeted \$1 million for the development of this computerization. Using the latest technology, it will give offices a wide range of capability and integration, going far beyond current practice management systems. Thus, as Exan's clients upgrade and enhance to keep a step up on their competitors, its software programs will keep pace.

With well over a decade of experience, Exan has provided computer systems to more dentists in Canada than any other company. With its slate of current and future projects well-defined and backed by stable financing, Exan expects to remain the standard by which all other systems are measured.

Interested dental professionals may obtain further information by contacting: Daria Wallsten, Program Officer, Canadian Society for International Health, 170 Laurier Avenue West, suite 902, Ottawa, Ontario K1P 5V5. Telephone, 613-230-2654, fax 613-230-8401. ■

Manitoba Elects New President



Dr. Jan S. Brown

Dr. Jan S. Brown was elected president of the Manitoba Dental Association (MDA) January 22 in Brandon, Manitoba, during the association's 109th annual meeting.

Dr. Brown graduated from the University of Manitoba's faculty of dentistry in 1969. Since then, he has practised general dentistry with the Assiniboine Dental Group in St. James, Manitoba, a suburb of Winnipeg. He is the fifth member of his dental group to become president of MDA, preceded by Dr. Ted Derrett (1975), the late Dr. Walker Shortill (1979), Dr. Gene Solmundson (1982), and Dr. Ken Skinner (1987).

Both Dr. Brown and his partners have maintained an affiliation with the faculty of dentistry at the University of Manitoba, as part-time clinical instructors.

A keen sports enthusiast, Dr. Brown served as president of the Winnipeg Blue Bombers football team in 1984-1985. His volunteer work outside of dentistry, particularly with the United Way, was honored in 1984, when he became

an honorary citizen of the City of Winnipeg and a member of the Manitoba Order of the Buffalo.

Dr. Brown has been a member of the MDA board since 1990, and was vice-president of the association in 1992. He has also served as the president of the Winnipeg Dental Society.

Joining Dr. Brown on the 1993 MDA board of directors are: Dr. Heinz Scherle, past-president; Dr. Mark Buettner, vice-president; and Dr. Tom Dobbs, Dr. Craig Fedorowich, Dr. Ron Monczka, and Dr. Barry Rayter. ■

American College of Dentists Charters Western Canada Section

The American College of Dentists (ACD) has established a Western Canada Section, completing a process that began two years ago when representatives from all regions of Canada met with ACD officials to discuss ways and means of making the college's Canadian component stronger.

Representing Canada's three Prairie provinces, the Western Canada Section is the last of five Canadian sections to be established by ACD. The other sections

are Atlantic, Quebec, Ontario and B.C.

The Western Canada section was officially founded last fall, when ACD's president, Dr. Thomas Slack of Colorado Springs, presided over an impressive charter ceremony held during CDA's 1992 dental meeting in Calgary.

Established in 1920, the American College of Dentists has a world-wide membership of over 6,000. Its objectives are to promote the highest ideals in health care, the advancement of the standards and efficiency of dentistry, the development of good human relations and understanding, and the extension of the benefits of dental health to the greatest number of people possible. ■

A "Magic" Toothbrush?

Using a thermo-chromic process and a new plastic called Vibatan, Jordan has developed a line of tooth brushes that could encourage children to brush longer.

Known as Jordan Magic, the new brushes feature heat sensitive handles. After about two minutes of use — or about the time it takes for a child to brush his or her teeth properly — the handles react to the heat of the user's hand by changing



The executive of the Western Canada Section of the American College of Dentists — (left to right) president, Dr. Gordon Thompson, Edmonton; vice-president, Dr. James Wright, Winnipeg; and secretary/treasurer, Dr. Richard Sandilands, Edmonton (far right) — meet with Dr. Thomas Slack, Colorado Springs, the past-president of the American College of Dentists.



color. Blue handles turns white, red ones turn yellow and purple ones turn pink. ■

Dentist Honored For Writing Skills

A Toronto dentist has won Canada's most prestigious award for equine writers.

Dr. Steven Brown was presented with a Sovereign Award in December for his feature article "Don't Bet On My Horses," which ran in the March 1992 issue of *International Thoroughbred Digest*.

The Sovereign Awards are presented annually to the most outstanding performers in Canadian thoroughbred racing, both equine and human, by the Jockey Club of Canada. Winners are determined by a vote of selected racing officials and journalists. ■

Quebec Dentists Create New Dental Academy

Quebec's dentists have created a new dental academy to bring together dentists who have made significant contributions to the advancement of their profession.

Founded by the Order of Dentists of Quebec, the Quebec Dental Academy will work with public and private organizations to promote the prevention of dental disease, make Quebecers aware of the importance of good dental health, and encourage dental research.

The academy will also promote professional ethics and other initiatives designed to encourage excellence in the practise of dentistry.

Dr. Jean-Paul Lussier was elected president of the society during its founding meeting November 12. He will be joined on the board by Dr. Morton Lang, vice-presi-

WHAT'S IT?

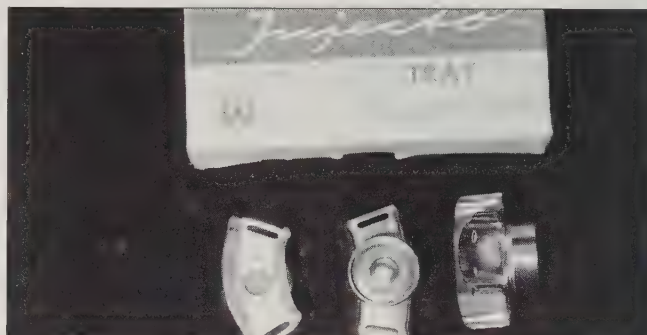
The "Injecto" tray has us baffled. About four centimetres long and two cm wide, it came three in a box, probably dates from the 1950s or '60s, and was manufactured in West Germany.

Our model was found in a box of dental materials that are some 30 or 40 years old. Three views of the tray show it (left to right) in what appears to be a bottom, top and side position, respectively. (We're really not sure which end is up.) A removable middle "plate," which has been removed

in the middle photo, comes free from the centre and may have used to hold some type of impression material.

If you can identify the "Injecto" tray, please contact Dr. Ralph Crawford, Journal Editor, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6.

Do you have an unidentifiable dental item? Don't know what it was used for? Send us a photo and a description and we'll see if our readers can help solve the mystery. ■



dent; Dr. Marc R. Trépanier, secretary-treasurer; and Drs. Louis Bernier, Jacques Dufour, Yves Dufresne and Charles E. Gosselin. ■

Laval Dental School Granted Faculty Status



The University of Laval's dental school has been granted faculty status.

Laval first accepted dental students in 1971, four years after the university's board of governors passed a motion recommending the establishment of a dental school. Located near Quebec City,

its primary objective was to meet the need for dentists in eastern Quebec. That goal was met. Today, 73.8 per cent of Laval's dental graduates practise in eastern Quebec.

Until this year, Laval has only offered a basic doctor of dental medicine (DMD) program and a single postgraduate course in multidisciplinary dentistry. Now that the school has achieved faculty status, however, plans are under way to revise the DMD program, make the evaluation of students more uniform, and offer more postgraduate courses.

The faculty should be ready to offer a diploma course in gerodontics in the near future. In addition, it intends to develop a masters program in oral and maxillofacial surgery as well as a masters program in dental science.

With full faculty status, the faculty will also enjoy more rights, including having its dean sit on the university's board of governors with full voting rights. ■

**HELP AVOID
THE BELLYACHING
OVER PAIN...**



Obituaries

Bleakley, Dr. Roger D.: Dr. Bleakley graduated from the University of Toronto's dental faculty in 1954. He practised dentistry in Port Alberni, B.C., for more than 35 years, from 1955 to 1991. He died October 12, 1992.

Brown, Dr. Daniel F.: Dr. Brown graduated from the University of Toronto dental faculty in 1952. He practised one year in Harriston, Ontario, before relocating to Petrolia, where he practiced until 1981. Dr. Brown was born in Miri, Borneo, and served as a paratrooper with the Canadian Forces during the Second World War. He died December 8.

Fast, D. Hans: Dr. Fast emigrated to Canada from the Ukraine in 1949. After graduating from the University of Alberta in 1954, he practised restorative dentistry in Altona, Manitoba. In 1959 he moved to Winnipeg. Dr. Fast was a life member of CDA. He died January 8.

Galbraith, Dr. Ronald H.: Dr. Galbraith graduated from the University of Toronto's dental faculty in 1935. He was a life-member of the Canadian Dental Association. He died September 23, 1992.

Jameson, Dr. Carron Baker: Dr. Jameson graduated from the North Pacific Dental College in Portland, Oregon, in 1941. He practised dentistry in Victoria, B.C., and was president of both the Victoria Dental Association and the B.C. Dental Association. He died October 26, 1992.

Madronich, Dr. W.G.: Dr. Madronich graduated from the University of Toronto's dental faculty in 1959. He practised dentistry in Hamilton, Ontario. He died September 14, 1992.

Margolese, Dr. Shep: Dr. Margolese graduated from the University of Toronto's dental faculty in 1943. He was a life-member of the Canadian Dental Association.

Mraz, Dr. George J.: Dr. Mraz graduated from the University of Toronto's dental faculty in 1956.

Tetz, Dr. Douglas Frank: Dr. Tetz graduated from Loma Linda University in 1986. An orthodontist, he practised in Red Deer, Alberta. He died December 27. ■

BOARD OF GOVERNORS

NOTICE OF MEETING The Annual Meeting

The Interim Meeting of the Board of Governors of the Canadian Dental Association will be held May 1, 1993 (Saturday), at the Metro Toronto Convention Centre, Toronto, commencing at 9:00 a.m. on May 1.

It is brought to your attention that meetings of the Board of Governors are open to all members of the Association.

The Board is composed of twenty-six governors with voting privileges and a Chairman. Governors represent members across Canada on a 1 to 500 ratio. The Canadian Forces Dental Services, Student members and Affiliate members from Québec are represented by one member each.

In addition, there are two non-voting members, namely, the senior dental representatives of the Department of National Health and Welfare and the Department of Veterans Affairs.

A complete listing of the Board of Governors follows:

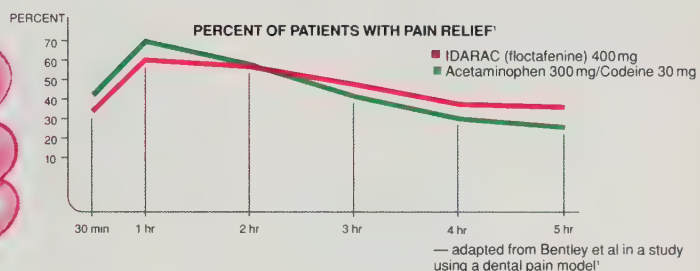
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When patients come hollering, relieve the pain with Idarac 400 mg. It's as effective as a narcotic (acetaminophen 300 mg / codeine 30 mg),¹ while avoiding narcotic-specific side effects.



Idarac has been proven effective in sprains, strains, dysmenorrhea, and dental pain.¹⁻³

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No significant fecal blood loss during clinical study in normal subjects.⁴ And in over 6 million patient days in Canada, the incidence of adverse GI events associated with short term use has been low.⁵ So help avoid the bellyaching over pain with Idarac 400 mg t.i.d....analgesia of a distinctive character.

EFFECTIVE, NON-NARCOTIC

IDARAC⁴⁰⁰ mg

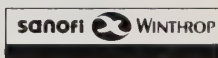
floctafenine

HELPS AVOID THE BELLYACHING OVER PAIN[†]

[†] Idarac (floctafenine) is a nonsteroidal anti-inflammatory drug indicated for short term use in acute pain of mild to moderate severity.



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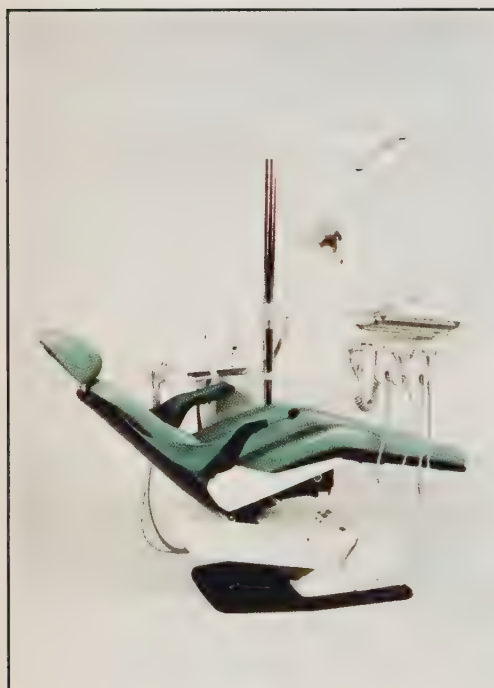
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CDSPI

CDSPI is NOT an Insurance Company

For two decades now, I have been involved with Canadian Dental Service Plans Inc. (CDSPI) in various leadership roles. During this time, I have noticed that our organization has suffered from an identity crisis. This is exasperating. Time and time again, the dentists I meet in my travels across the country erroneously refer to CDSPI as an insurance company or an insurance broker.

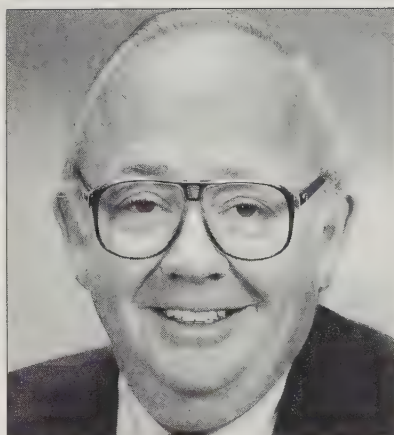
But we are neither.

Tackling this misconception is one of the challenges I will face during my term as CDSPI's president. Most people feel a certain security in being able to attach a label to someone or something. But because CDSPI is unique in many respects, it is hard for many dentists to put us in a slot.

For more than 30 years, CDSPI has administered insurance and investment programs for the dental profession. We act as CDA's council on insurance and investment. And as a service arm of CDA, our role is to find the insurance plans and retirement products that meet the unique needs of Canadian dentists.

The group buying power of the dental profession gives us strength when we negotiate insurance premiums and contract provisions with the insurers. We work with the insurers so that you don't have to. In other words, we do your insurance shopping for you.

CDSPI administers and markets the Canadian Dentists' Insurance Program (CDIP) on behalf of CDA and the cosponsoring provincial



*Dr. Rod Moran
President of CDSPI*

dental associations. CDA is the "master policyholder," not CDSPI. We are here to help you fill out the required insurance forms and, hopefully, keep the paperwork as painless as possible. We also process your applications, collect premiums and develop printed material to keep you informed about CDIP. And if you ever need to file a claim, CDSPI acts as a liaison between you and the insurer, doing whatever we can to make the claims process as smooth as possible.

CDA's RSP is also administered by CDSPI. Owned by CDA, the plan is only available to the dental profession, and offers five investment options. We also provide an information service on registered retirement income funds (RRIFs) and annuities.

CDSPI provides insurance and investment programs that best serve our dentist participants. But

we don't stop there. As an impartial body, looking out for your best interests, we reexamine these programs continually and modify them, if necessary, to suit your changing needs. In addition, we are a resource centre, willing and able to provide you with sound information and assistance. For example, our free insurance review service provides accurate, unbiased information to help you evaluate any insurance policies and proposals you may receive, including leasing requirements.

CDSPI does all of this for the dental profession without charging fees or commissions. That in itself should indicate that we are not an insurance company.

But does it matter how you perceive us? Maybe not, if we only think of the short term. After all, it's to our advantage if you are aware that CDSPI is ready and able to meet your insurance needs. But if you don't know more than that about CDSPI, it hurts both of us in the long run. You lose and we lose if you don't know that we are capable of providing you with much more than insurance.

We have not yet found an acceptable way to correct the misconception that CDSPI is an insurance company. That's why we are currently reviewing our marketing and communications to the dentists of Canada. Commonsense also dictates that a service organization, such as CDSPI, should periodically evaluate the effectiveness of its communications program. Because if even one of you doesn't



know who we are, then that program has failed to meet its objectives.

Here's where you can help. If you have ever thought of CDSPI as an insurance company, tell us why you have done so. What do you think we can do to change this perception? Please write to me at CDSPI with your comments. In the interim, please repeat after me:

CDSPI IS ...

NOT an insurance company.

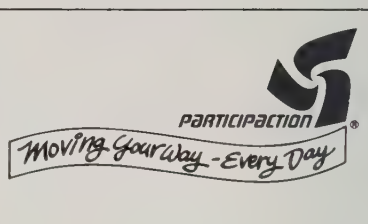
- ✓ NOT a brokerage operation.
- ✓ NOT an insurance sales agency.
- ✓ NOT independent of the dental profession.
- ✓ NOT offering services to the general public.

CDSPI ...

- ✓ IS a non-profit service organization created by the dental profession.
- ✓ IS administrator, on behalf of CDA and the cosponsoring provincial dental associations, of programs for the benefit of the profession.
- ✓ IS administrator of the Canadian Dentists' Insurance Program (CDIP), the most comprehensive insurance program available to dentists in Canada.
- ✓ IS administrator of the CDA Retirement Savings Plan (CDA RSP) and related retirement services programs.
- ✓ IS your service organization.

CDSPI

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Product Summary

EFFECTIVE, NON-MARCOTIC

IDARAC⁴⁰⁰mg

(floctafenine)

HELPS AVOID THE BELLYACHING OVER PAIN¹

200 mg and 400 mg tablets

THERAPEUTIC CLASSIFICATION: Analgesic.

ACTIONS:

IDARAC (floctafenine) is an anthranilic acid derivative which has analgesic and anti-inflammatory properties. The analgesic activity is comparable to that of other mild analgesics in the relief of acute pain. Floctafenine has been shown to inhibit *in vitro* biosynthesis of prostaglandins PGE₂ and PGF₂α. Gastrointestinal bleeding determined by daily fecal blood loss, was shown in one clinical trial to be approximately 1.2 mL after 1600 mg/day of floctafenine compared to 10.4 mL after 2400 mg/day of acetylsalicylic acid. In normal volunteers, IDARAC was well absorbed after oral administration and peak plasma levels were attained 1-2 hours after administration and declined in a biphasic manner, with an initial (α phase) half-life of approximately 1 hour and a later (β phase) half-life of approximately 8 hours. Floctafenine and its metabolites do not accumulate following oral administration of multiple doses. After oral and intravenous administration of ¹⁴C-labelled IDARAC, urinary excretion accounted for 40% and fecal and biliary excretion accounted for 60% of the recovered radioactivity. The main urinary metabolites are floctafenic acid and its conjugate with minimal amounts of free floctafenine.

INDICATIONS:

IDARAC (floctafenine) is indicated for short-term use in acute pain of mild and moderate severity.

CONTRAINDICATIONS:

IDARAC (floctafenine) is contraindicated in patients with peptic ulcer or any other active inflammatory disease of the gastrointestinal tract, and in patients who have demonstrated a hypersensitivity to the drug.

WARNINGS:

Use in Pregnancy: The use of IDARAC (floctafenine) in

women of child-bearing potential requires that the likely benefit of the drug be weighed against the possible risk to the mother and fetus. Since there is no information on the excretion of floctafenine in breast milk, use of the drug in women who are nursing is not recommended.

Use in Children: The safety and efficacy of IDARAC in children have not been established and therefore its use in this age group is not recommended. The safety and efficacy of long-term use of IDARAC have not been established.

PRECAUTIONS:

IDARAC (floctafenine) should be used with caution in patients with impaired renal function. In clinical trials with IDARAC dysuria, without apparent changes in renal function, was reported. The incidence of dysuria was greater in males than in females and occurred primarily in the first morning voiding. It has not been established whether dysuria is related to dose and/or duration of drug administration. Patients taking anticoagulant medication may be given IDARAC with caution. Alterations in prothrombin time have been observed only in clinical trials where the administration of IDARAC was extended beyond two weeks. IDARAC should be used with caution in patients with a history of peptic ulcer or other gastrointestinal lesions.

ADVERSE REACTIONS:

The most commonly occurring side effects reported during IDARAC (floctafenine) therapy were:

Central Nervous System: Drowsiness, dizziness, headache, insomnia, nervousness, irritability.

Gastrointestinal System: Nausea, diarrhea, abdominal pain or discomfort, heartburn, constipation, abnormal liver function, gastrointestinal bleeding.

Urogenital System: Dysuria, burning micturition, polyuria, strong smelling urine, urethritis and cystitis.

Other less frequently occurring side effects were: tinnitus, blurred vision, dry mouth, thirst, bitter taste, anorexia, stomach cramps, flatulence, hot flushes and sweating, tachycardia, weakness and tiredness.

Allergic-type Reactions: Maculopapular skin rash, pruritis, urticaria, redness and itching of the face and neck.

SYMPTOMS AND TREATMENT OF OVERDOSE:

No cases of overdose have been reported with IDARAC (floctafenine), therefore no specific information on

symptoms or treatment is available. Standard procedures to evacuate gastric contents, maintain urinary output and provide general supportive care should be employed.

DOSAGE AND ADMINISTRATION:

The usual adult dose of IDARAC (floctafenine) is 200 to 400 mg every 6 to 8 hours as required. The maximum recommended daily dose is 1200 mg. IDARAC is recommended for short-term management of acute pain. The tablets should be taken with a glass of water. IDARAC is not recommended for use in children.

AVAILABILITY:

IDARAC (floctafenine) tablets are available as round, biconvex, creamy white tablets containing 200 mg floctafenine with the markings "W" on one side and on the other side "I" with "200" below; and as round biconvex, creamy white tablets containing 400 mg floctafenine with the markings "W" on one side and on the other side "I" with "400" below. IDARAC is available in bottles of 100 and 500 tablets. Store at room temperature, protected from light. IDARAC is a Schedule F (prescription) drug. Product monograph available upon request.

References:

1. Bentley K, Camarda AJ, Melzack R, Morgan P, Roy C. Floctafenine, acetaminophen/codeine combinations, and placebo in dental pain. *Curr Ther Res.* 1991;49(2):147-154.
2. Lomas DM, Gay J, Midha RN, Postlethwaite DL. A double-blind comparative clinical trial of floctafenine and four other analgesics conducted in general practice. *J Intern Med Res.* 1976;4:179-182.
3. Data on file, Sanofi Winthrop (Dysmenorrhea Study).
4. Baird IM. A comparative blood loss study of floctafenine and aspirin in normal subjects. *Br J Clin Pharmacol.* 1976;3:936-938.
5. Data on file, Sanofi Winthrop (Adverse Events Report).

¹ Idarac (floctafenine) is a nonsteroidal anti-inflammatory drug indicated for short term use in acute pain of mild to moderate severity.

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BOOK REVIEWS

Tissue Integration in Oral, Orthopedic and Maxillofacial Reconstruction:

Proceedings of the Second International Congress on Tissue Integration in Oral, Orthopedic and Maxillofacial Reconstruction

Edited by William R. Laney and Dan E. Tolman

1992, Quintessence Publishing Co., Inc., Chicago
400 pages, 130 B & W illustrations, \$68 (U.S.)

This soft-cover book is a "must read" for any practitioner or researcher who wants to stay abreast of current developments in the burgeoning area of tissue-integrated implants. Quintessence has provided a valuable service in publishing the proceedings of the Second Congress on Tissue Integration less than two years after the meeting was held at the Mayo Medical Center.

The text contains 50 scientific papers or abstracts, 18 poster clinic abstracts, and the reports of four consensus panels, all of which constitute the state-of-the-art in implants, as presented by the top researchers and clinicians in the field.

Scientific papers appear in the order in which they were presented at the meeting (approximately eight papers were presented in each congress session), followed by a transcript of the ensuing discussion.

Although it is only a minor concern, the grouping of subjects in the text is haphazard, making it more difficult to locate and compare papers on similar topics. In addition, some of the papers on the orthopedic applications of tissue integration may not be clinically applicable to dentistry, although they do indicate the increasingly universal application of this modality. Typically, the poster presentation abstracts provide only a snapshot of each subject, whetting the appetite for more information and making

the reader wish he or she had been present.

The consensus panel reports are a fitting conclusion to the proceedings, and will likely serve as the standard of knowledge and clinical procedure in the field of tissue integration until the next congress is held in 1995.

While researchers are always on the lookout for valid references in their particular field, clinicians, in particular, will be in a better position to evaluate recent claims regarding the multitude of dental implant systems available on the market today after reading this book. Given the credibility of the congress presenters, and the timeliness of their material, this is a book which will meet the needs of anyone with an interest in tissue-integrated implants. ■

Reviewed by:

Dr. Joanne N. Walton, CD, DDS, Cert. Prostho., FRCD(C)
Assistant Professor, Department of Clinical Dental Sciences, University of British Columbia, Vancouver, B.C.

Anatomical Atlas of the Temporomandibular Joint

By Y. Ide and K. Nakazawa

1991, Quintessence Publishing Co., Chicago, 116 pages, color illustrations, \$142 (U.S.)

This atlas is the result of a collaboration between Dr. Y. Ide, an anatomist, and Dr. Nakazawa, a temporomandibular joint specialist in private practice. Two additional authors (T. Hongo and J. Tateishi) appear on the publication information page, but receive no mention whatsoever on the cover nor in the text itself.

This clinically-oriented book is intended for medical and dental students as well as for clinicians wishing to renew their knowledge of the temporomandibular joint. The use of skilfully-rendered art-

work, in place of photographs, aids in the visualization of this complex joint. The book goes beyond the mandate of a traditional atlas in that it attempts to cover function as well as form, with the ultimate purpose of providing better insight into the causes and treatment of temporomandibular joint disorders.

The atlas is divided into two parts, morphology, which is the major portion (76 pages), and function (25 pages). Part one is further divided into five chapters: definition, bony structures, muscles, soft tissue (internal) components, and vascular and nerve supply. Part two is divided into three chapters: functional considerations, mandibular movements, and muscles of mastication.

Although it is a given that virtually every new textbook suffers from some errors that are corrected in subsequent editions, this atlas contains more than its fair share. Errors appear almost immediately. For instance, in the preface the authors proclaim that the temporomandibular joint is unique because of its bilateral nature. Synovial joints between articular facets of adjacent vertebrae are also bilateral, in that movements about these joints occur simultaneously. Another example appears in the very first illustration (**Fig. 1-1**). In this case, the first cervical vertebra is labelled axis rather than atlas, and it is further labelled with a spinous process that the atlas does not possess. **Fig. 2-2** features an articular eminence, but is labelled articular tubercle, a non-articular lateral feature of the eminence. Similarly, **Fig. 2-7** really shows the petrosquamous fissure, not the petrotympanic fissure. A subsequent attempt to label this feature in **Fig. 2-7** misses completely and comes to rest in the middle of the tympanic plate. In general, there is no attempt to refer to the figures in the text, which makes reading the descriptions rather difficult.

The book's text also contains some questionable points. For example, the deep head of masseter muscle is described as running an-

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teriorly and downward when, in fact, the fibres are almost vertical. Only when the mandible is protruded do the deep fibres run inferiorly in an anterior direction. The maxillary artery on page 46 is described as occupying a medial position relative to the inferior lateral pterygoid muscle in most Caucasians. My own experience is that the reverse is true, namely that the artery runs on the lateral aspect of the muscle. A quick check with other textbooks of anatomy verified this.

Part Two is handled adequately, but covers a field of investigation that is changing rapidly. Consequently, references should be included for current and sometimes contentious concepts. And although a list of 24 references are provided at the end of the book, most are not referred to in the text.

In general, the artwork is excellent, but the author's decision to rely solely on drawn figures in a clinically-oriented text is questionable. It would have been better to include examples of current imag-

ing techniques, to better relate the three-dimensional nature of the joint, and to better understand joint radiographs and scans. A number of illustrations have translucent paper rather than clear acetate overlays, and these obscure somewhat the illustration beneath. In addition, shadow outline sketches on the overlay do not line up (at least they don't in my copy), which creates a ghosting effect.

In summary, this first edition gives us a better understanding and perspective of the temporomandibular joint, but it falls short by not attempting to relate the illustrations to clinical joint imaging. Considering its rather high price – excellent artwork aside – I do not consider this atlas to be a good value. ■

Reviewed by:

Bernard Liebgott, DDS, PhD
Professor and Acting Chair, Department of Anatomy and Cell Biology, Faculty of Medicine, University of Toronto

LONG IN THE TOOTH?

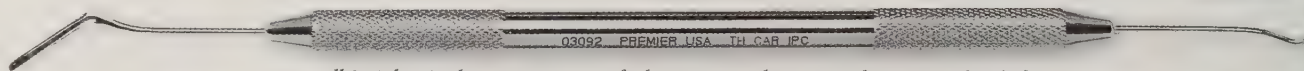
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Dental Seminar Attracts Large Audiences



Mr. Mark Sarner, Manifest Communications, stresses a point during a recent presentation of the Canadian Dental Consumer in the '90s Seminar.

CDA's new and improved Canadian Dental Consumer in the '90s seminar, now on the last leg of a five-city tour, is attracting large audiences of dentists and allied dental personnel.

Made possible through the generous support of Ash Temple Limited, the seminar has already been presented in Ottawa, Toronto, Vancouver and Halifax. It will be presented in Montreal April 16.

The seminar, conducted by Mark Sarner of Manifest Communications, addresses the current and future demographic, economic and consumer trends facing Canadian society and, more specifically, the dental profession.

First piloted at CDA's 1991 annual meeting in Quebec City

and subsequently presented to dental school graduates, the seminar is designed to give dentists a better understanding of the widespread and profound changes taking place in Canadian society in the '90s. It examines why many dentists are not as busy as they would like to be as well as addressing a number of key demographic issues. These include: the ageing of the baby boomers, the growing population of seniors, the make up of Canada's immigrant populations, and the changing structure of today's families. Finally, the seminar explores how demographics and other issues effect the types of dental care and services offered by dentists today, and forecasts what types of care and services they will offer in the future.

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March 1993

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Phone'N Pay – A New CDA Member Service

CDA has joined forces with the Toronto Dominion Bank to provide a unique new service to its member dentists – Independent Business Payroll.

Known as **Phone'N Pay**, Toronto Dominion's telephone payroll service is specifically designed for companies with 30 or fewer employees. It's a simple one, two, three process:



1. Each pay period, at a prearranged time, a TD **Phone'N Pay** account representative calls the dentist's office to obtain the hours worked and charged by the dentist's employees in that particular pay period.

2. The next day, the bank prepares a payroll output envelope that the dentist or his or her representative can pick up at the designated TD branch. The envelope contains signed employee cheques or direct deposit slips, as well as the office payroll reports for the pay period.

3. TD's payroll services department automatically calculates and remits all government deductions on behalf of the dentist and his or her staff.



Phone'N Pay includes an easy-to-read combined payroll register and worksheet; current year-to-date and personnel information; complete earnings and deductions statements for each employee; and automatic recordings of employment and T4 tax slips.

As part of its agreement with CDA, the bank has agreed to waive the initial \$50 implementation fee normally charged to individuals joining the Phone'N Pay system. CDA members participating in **Phone'N Pay** will only be charged TD's low monthly base and per-employee fees. For example, a CDA member with a five-employee dental office would pay a \$10 monthly base fee plus an additional \$1 fee per employee, for a total cost of \$15 per pay period or \$390 per year (if the pay period is every two weeks).

Dentists interested in participating in **Phone'N Pay** are asked to contact the TD Bank, Payroll Services, at the following numbers, toll-free: 1-800-ON-TD-PAY, or 1-800-668-3729. In Toronto call 1-416-982-8957 or fax: 416-944-4273.

(Continued from page 1)
DENTAL SEMINAR...

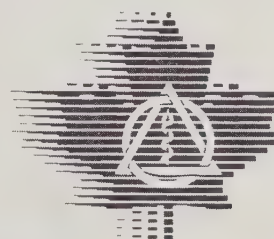
Mr. Sarnar has worked in the field of strategic communications and social marketing for the past 16 years, earning national recognition. He and his associates have created some of Canada's major mass-audience health promotion strategies, with a client list that includes: Participaction, Health and Welfare Canada, the Addiction Research Foundation, Seniors Secretariat, and the Federal Centre for AIDS.

The new and improved Canadian Dental Consumer in the '90s seminar has three main objectives...

On completing the seminar, each participant:

- ✓ will have a better understanding of the widespread and profound changes happening in Canadian society.
- ✓ will be better equipped to analyze the impact of practice changes
- ✓ will be more able to meet the needs of today's patients, not yesterdays.

Seminar participants receive a copy of *Your Action Planner*, a workbook that summarizes the seminar presentation and gives a step-by-step process for applying the information presented in the seminar directly to their practice.



Communiqué is published six times a year by the Canadian Dental Association and is distributed to Association members as a direct member service.

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Communiqué appreciates hearing from readers — please send your comments to the editor.

Communiqué is published in English and French, and is available to members in the language of their choice.

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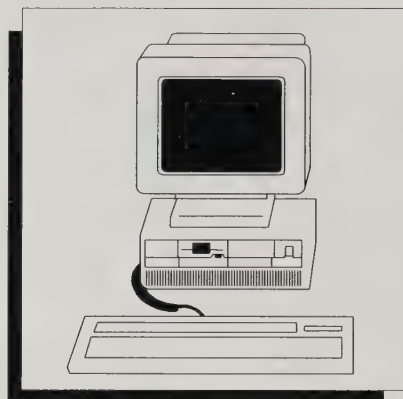


CDAnet Plus Keeps Growing, and Growing, and Growing...

More than 1,400 Canadian dentists are now participating in CDAnet, and their numbers keep growing and growing. The big news in February is that one of the largest participants, Ontario Blue Cross, began to accept electronic claims. This should have an extremely positive impact on CDAnet's growth throughout 1993.

The CDAnet committee is continuing its dialogue with the insurance industry regarding "employer certified dental plans." To date, dentists have been unable to submit electronic claims to these plans. Recently, however, Mr. Denis J. Devos, the chairman of the Interassure Group of companies, wrote an encouraging letter to Dr. Don MacFarlane, the chairman of the CDAnet committee, stating that they are continuing to work with their clients to have electronic claims universally accepted:

"On behalf of the Interassure Group of companies, I would like to congratulate you on the excellent progress you have made with respect to the participation of the dental fraternity in CDAnet. We realize that the results reflect a great deal of effort on the part of organized dentistry in promoting the concept across Canada. The carriers that make up the Interassure Group of companies appreciate what you have done, and are committed to the concept. We realize that, in many situations, the dentist is unable to submit the claim electronically due to constraints put on the process either by our clients, their consultants or ourselves. I wanted to ensure however, that you and your associates are aware that we are continually working with our clients and their consultants to have EDI univer-



sally accepted by them. Change takes time and hopefully the members participating appreciate this. It is only through continued support from all concerned parties that we will all benefit from these processes."

Interassure takes in Prudential Group, North American Life, Canada Life, Sun Life, Great West Life, London Life, Mutual Group, Standard Life, National Life and Laurentian Imperial.

CDAnet at the Toronto Dental Meeting

CDAnet committee members and representatives from VCS Technologies, the company developing CDA's CDAnet Plus program, will be on hand at the 1993 CDA Annual

Dental Meeting April 28 to May 1 in Toronto.

Dentists interested in learning more about CDAnet and CDAnet Plus are encouraged to stop by the CDAnet booth, 831/930, for a personal demonstration.

CDAnet Plus – CDA's value-added package – will be available in 1993. Value-added services will provide dentists with immediate electronic and voice connection to E Mail, financial services, practice management programs and product information. Many more services of value to the dental office will be added in the future.

CDAnet Plus Seminars

Dentists are also invited to attend the CDAnet Plus seminars that will be provided at various times on Friday, April 30. Call 1-800-267-9701, ext 261, to reserve a space for you and your dental staff.

Late Flash!

Prudential Insurance of America is going on-line. Beginning April 15, Prudential will accept claims over CDAnet in real time.



DID YOU KNOW Canadians enjoy better health but spend less on care than Americans

A news item in the January 15th *Canadian Medical Association Journal* reports that Canadians live longer and generally enjoy better health than Americans, but spend substantially less on health care. Canadians have a lower infant mortality rate and enjoy greater life expectancy among both men and women. Cancer is the only major disease for which Canada has a higher incidence rate. Canadians spent \$1,837 (U.S.) per capita on health care services in 1990 compared with \$2,566 (U.S.) spent by Americans — almost 40 per cent more.

However, one observer says Canadians should not become complacent because of the report. "It's not the U.S. we should be comparing ourselves to," Jane Fulton, professor of ethics and health policy at the University of Ottawa, told Canadian Press. "This is a big mistake Canadians make. We should be comparing ourselves to countries where the health indices show a healthier population and which spend less money on health care than we do, like Sweden and Germany and Finland and Denmark."

CDA Promotes Bicycle Helmet and Mouthguard Safety

Sports safety will be the feature of an upcoming CDA member benefit sponsored by the pharmaceutical firm Sandoz Canada Inc. The promotion, similar to one carried out last year with the Canadian Medical Association, will see a bicycle helmet promotional package mailed to the offices of CDA member dentists.

Dentists will be asked to display this material, which includes pamphlets and a display rack, in their reception area. The promotion urges parents to protect their families from head injuries by having their children wear

a bicycle helmet while cycling. The accompanying brochure contains a bicycle helmet offer for those parents wishing to purchase a helmet.

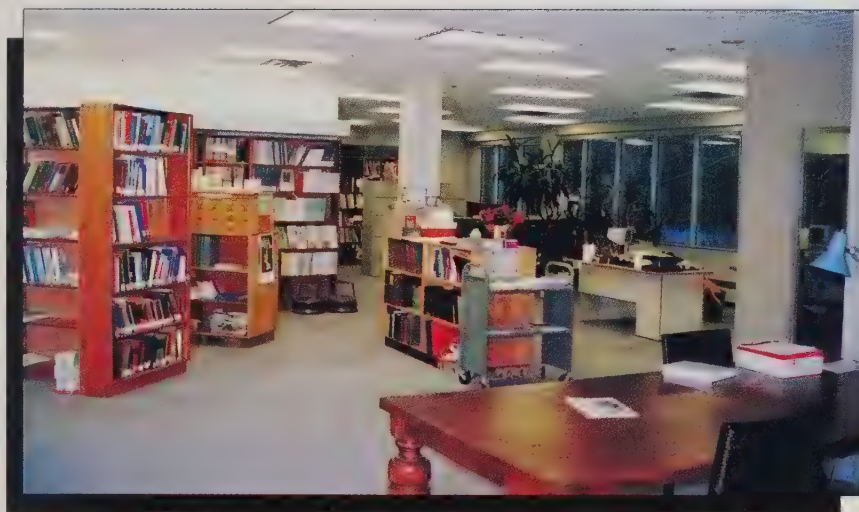
The promotion will also stress the importance of wearing a mouthguard, and encourage dental patients to speak with their dentist regarding sporting activities. This should be the first step toward reducing the number of dental-related injuries on playing fields, in gymnasiums and on hockey rinks across Canada.

CDA is encouraging all dentists to support sports safety by displaying the CDA/Sandoz bi-



cycle helmet and mouthguard promotion when it arrives in their dental office.

CDA Library Collaborates With Health and Welfare Canada On Family Violence Awareness Project



The Sydney Wood Memorial Library, Canada's most complete repository of dental information.

CDA's Sydney Wood Bradley Memorial Library has undertaken a new project with Health and Welfare Canada to increase the dental community's awareness of family violence.

With a grant provided by Health and Welfare, the library is assembling an extensive literature package that will address violence against women, children and the elderly.

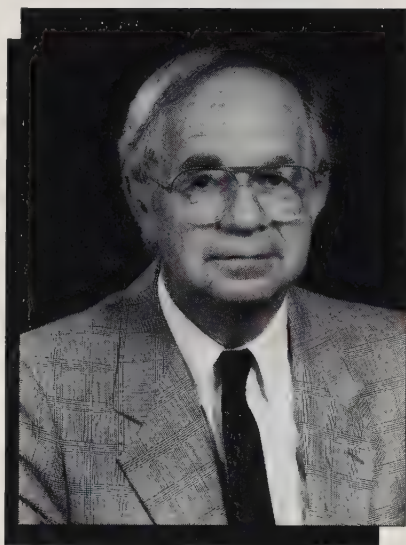
Material for the package will be gathered from dental litera-

ture, provincial organizations, universities, social service agencies and national associations involved in educating the public and professions about violence and abuse.

The completed package will be available through the CDA Library in April 1993. Watch for details on the library page of the *CDA Journal*.



Health and Welfare Canada and U of T Undertake Fluoride Study



Dr. Donald Lewis,
University of Toronto

The University of Toronto, with Dr. D.W. Lewis as principal investigator, has signed a contract with the Department of National Health and Welfare to investigate the effects of fluoride.

Signed October 27, 1992, the contract's main terms of reference are:

1) Estimate the daily intake of inorganic fluoride from dental care products (i.e. dentifrices, gels, fluoride supplements, varnishes, mouth rinses, etc.) by various age groups of the population of Canada.

2) Collect and critically review the published and other accessible information concerning the beneficial effect (i.e. the reduction in dental caries) on the dental health of the Canadian population associated with the total intake (all sources) of inorganic fluoride.

3) Collect and critically review the published and other accessible information concerning the

relationship between the total intake of inorganic fluoride and the incidence of dental fluorosis within Canada.

4) Using the information derived from the second and third objectives, identify (i.e. from all potential sources of exposure) a recommended total daily intake of inorganic fluoride.

5) Discuss the relative effectiveness that various methods of delivering fluoride to the population currently have with respect to the reduction of dental caries.

The investigation will involve a two-stage process. In the first stage, a working group (chaired by Dr. Lewis) will be established to provide written reports on four

of the five terms of reference. Other distinguished Canadian researchers providing input into the terms of reference are: Dr. Ralph Burgess and Dr. Jim Leake of the University of Toronto; Dr. Christopher Clark, University of British Columbia; Dr. Amid Ismail, Dalhousie University; and Dr. David Banting, the University of Western Ontario.

In the second stage, the collected material will be reviewed by a selected panel. This panel will ultimately develop the final recommendations on reference number four – the identification of a recommended total daily intake of inorganic fluoride.

CDA Members Offered Special Travel Discount



Through a special arrangement with Marlin Travel, CDA members can now take advantage of special five-per-cent discounts on selected vacation packages.

The five-per-cent discount is available on a wide range of vacation packages offered by Air Canada, Canadian Holidays, Adventure Tours, Sunquest and a number of cruise line, motor coach and charter flight companies.

This unique offer is also available to the auxiliary staff, family members and travelling companions of CDA members. To get more information on the special five-per-cent discount, CDA members should phone Ms. Jennifer Merrick, account manager, client services, Marlin Travel, at (613) 287-9363.

Marlin Travel was established in 1967 and is now the largest travel company in Canada, with over 260 offices from coast to coast.

FDA/Den-Mat Lawsuit Clouds Bleaching Issue: No Action In Canada

Den-Mat can now market its in-home teeth whitener, Rembrandt Lighten Bleaching Gel, as a cosmetic in the United States.

In response to a lawsuit brought against the U.S. Food and Drug Administration (FDA) by Den-Mat, a U.S. court has ruled that Rembrandt appears to be a cosmetic, not a drug.

FDA had allowed teeth whiteners to be sold as cosmetics until September 1991, when it sent a letter to Den-Mat and other manufacturers informing them that these products would thereafter be classified as drugs. In effect, FDA told the manufacturers that they would have to seek "new drug" approval prior to marketing their teeth whitening products.

Den-Mat subsequently submitted scientific information on their product's safety to FDA, as required by the new drug approval process. When no reply was forthcoming, the company brought a lawsuit against FDA asking the court to render a ruling in favor of Rembrandt retaining its cosmetic classification.

Eventually, the court, while unable to determine whether Rembrandt was a cosmetic or a drug, denied FDA's motion to dismiss the case. FDA subsequently announced that it would reexamine the classification issue, and agreed not to pursue any regulatory action against Den-Mat during that process. The company then dropped its lawsuit.

The other U.S. manufacturers of teeth whiteners have also been given the green light to sell their products as cosmetics while FDA reaches a definitive conclusion on the drug/cosmetic question.

Dental bleaching agents have been on the market for years. They became increasingly popular in the late 1980s and early

1990s, both for dental office use and in-home application.

The recent U.S. case is interesting in that it represents a fundamental shift of responsibility. In effect, the court left the onus on the regulatory authority, in this case FDA, to prove that the product is unsafe. Until now, it has been up to the manufacturers to prove that their products are safe.

Nor is the decision without financial implications. The financial burden of proving that a drug or cosmetic is unsafe also rests with the authorities – and the public purse – rather than the manufacturer.

Canadian Implications

To date, the federal Health Protection Branch has taken no action in response to several letters from CDA requesting that teeth whiteners be classified as drugs rather than cosmetics. CDA's position has always been that there are no longitudinal studies proving the safety of these products, and until these studies occur, teeth whiteners

should not be freely sold over the counter.

At its 1991 interim meeting, CDA's board of governors stated:

"...these products (teeth whiteners) may be safe and effective. However, concern has been expressed because manufacturers do not have long-term safety data available. Some published scientific studies show that regular use of oxygenating agents may damage temporarily the soft tissues of the mouth, and may delay the healing of already damaged tissue. Other studies show that the use of these agents may cause varying degrees of damage to the pulp of the teeth.

"CDA will advise members of the results of the CDA communication with the Health Protection Branch of Health and Welfare Canada. In the interim, although light to moderate ageing stains may be visibly reduced by products containing oxygenating agents, the need for longer-term safety studies would suggest a cautious approach. Candid patient disclosure and adequate advice on home care are essential if clinicians choose to use or recommend these products. CDA believes that the public should only use these products after consultation with a dentist."

A Meeting of the Minds



CDA's management committee met with Canadian Dental Service Plans Inc. (CDSPI)'s management committee at CDA's Ottawa headquarters January 26. The object of the day-long meeting was to ensure that the greatest insurance benefits continue to be provided "to the dentists, by the dentists, for the dentists." Left to right: Mr. Kingsley Butler, executive vice-president, CDSPI; Dr. Ray Wenn, CDA president-elect; Dr. Gilles Dubé, CDSPI treasurer; Dr. Rod Moran, CDSPI president; Dr. Bernie Dolansky, CDA president; Dr. James Wright, CDSPI secretary; and Mr. Jardine Neilson, CDA executive director.

NDEB Initiates External Examiner and Written Examination Requirements

Beginning in 1994, an external examiner process and written examinations will be part of the National Dental Examining Board (NDEB)'s certification requirements for graduates from Canadian faculties of dentistry.

Approved during NDEB's November 1992 annual meeting, both requirements reverse certification procedures that have been in place for more than 20 years.

Prior to 1971, a graduate of an undergraduate dental program in Canada was required to successfully complete the NDEB written examination (essay-type) to be certified. In 1971, however, the board dropped the examination requirement, and recognized the examinations and evaluations administered by Canadian dental faculties. Certificates were issued to graduates of these faculties without further examination.

The recent NDEB resolution to reinstate written examinations and an external examiner process states:

WHEREAS, the maintenance of a national certification system remains a primary objective of the provincial licensing authorities and the NDEB; and

WHEREAS, the maintenance and enhancement of the principle of national portability continues to be a desirable objective; and

WHEREAS, the provincial licensing authorities have requested that all students in their final year in an approved Canadian dental faculty take a written examination; and

WHEREAS, the NDEB and the ACFD (Association of Canadian Faculties of Dentistry) have accepted the principle of the external examiner system, and external examiners will examine every final year student in all Ca-

Table I

Number of Canadians Writing NDEB Examinations After Graduating From Non-Canadian Dental Schools (per cent successful candidates)

Year	Written	Clinic Part A	Clinic Part B	Clinic Part C
Graduates of USA dental schools				
1990	50 (86)	48 (44)	24 (46)	18 (56)
1991	29 (90)	26 (54)	26 (46)	12 (33)
1992	23 (87)	16 (40)	11 (45)	08 (75)
Graduates of non-USA and non-Canadian schools				
1990	175 (57)	128 (53)	143 (46)	85 (52)
1991	198 (64)	137 (53)	109 (68)	91 (71)
1992	198 (66)	150 (57)	*79 (67)	*74 (57)

(*results to November 1992)

nadian faculties of dentistry; and

WHEREAS, the NDEB external examiners, after full discussion with faculty members, may determine that a candidate has not achieved a passing grade;

BE IT RESOLVED

THAT the external examiner system be instituted by 1994 for all Canadian faculties of dentistry; and

THAT the external examiners will have the right to recommend to the NDEB that a student not receive the NDEB certificate; and

THAT should a decision by the NDEB be that a student not receive a certificate, when the student is being recommended for a degree by his or her faculty, then this fact will be communicated to the Commission on Dental Accreditation of Canada; and

THAT the NDEB, following consultation with the provincial licensing authorities and ACFD, implement a written multiple choice examination for all students in Canadian faculties of dentistry, commencing after January 1994; and

THAT the president of NDEB be in contact with the provincial li-

censing authorities to convey this information and to determine the extent of their financial support as required by the NDEB to implement both the external examiner system and the written examination.

Statistics released at NDEB's annual meeting revealed that 453 of the 455 graduates from Canadian dental schools in 1992 received NDEB certification. Results (see **Table I**) were also released on the number of candidates who wrote the NDEB examinations after graduating from non-Canadian dental schools.

NDEB was established in 1952, under federal legislation, to "establish qualifying conditions for a single national standard certificate of qualification for general practitioner dentists."

The board is composed of 12 members. Each provincial licensing authority appoints one member, and two members are appointed by the Commission on Dental Accreditation of Canada. A student representative-observer, appointed by the CDA committee on student affairs, attends the NDEB annual meeting.

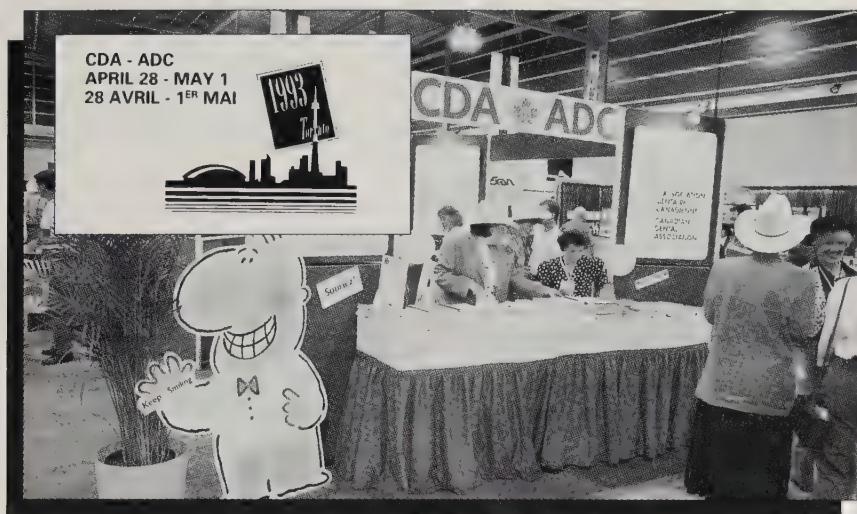
CDA 1993 Dental Meeting Shaping Up To Be Largest Ever

CDA's convention team is finalizing its plans for the association's 1993 Annual Dental Meeting, which will be held in Toronto April 28 to May 1.

Hosted by the Ontario Dental Association, the 1993 meeting is shaping-up to be the largest and busiest dental meeting in CDA's history.

Fifty-five clinicians are scheduled to appear as part of the main scientific program, and more than 110 clinicians will make presentations during minitable clinics. To date, 190 companies have reserved over 330 booths on the exhibit floor – a record for CDA and a tremendous vote of confidence from the Canadian dental industry.

Registration to the 1993 CDA Annual Dental Meeting is free for all CDA and ODA members who preregister. The deadline for pre-registration has been extended to April 2, 1993. On-site registra-



CDA's Annual Dental Meeting was held in Calgary in 1992. This year's Annual Meeting will be hosted by the Ontario Dental Association in Toronto.

tion will also be available, at a cost of \$27 per person.

Further information may be obtained by calling CDA's convention office at 1-800-267-6354. Registration forms (available in the *Journal*) can be faxed to

CDA at: 613-523-3062.

This year's dental meeting will be held at Toronto's I*Hotel and the Metro Convention Centre – one of the largest facilities in Canada.

CDA Preserves Rich Dental Heritage



Dr. Ralph Crawford (left) discusses dental history with Dr. David Lawton at the CDA museum display during the 1992 CDA Annual Dental Meeting in Calgary.

Over the past five years, CDA has made a concerted effort to preserve and display its rich dental heritage. A special museum area was created during renovations to the CDA headquarters two years ago, and many of the artifacts formerly in storage are now on display.

Journal editor Dr. Ralph Crawford has volunteered his services as the curator of the museum, and is currently cataloguing and restoring hundreds of donations from across Canada.

When asked to identify the most unique artifacts in CDA's collection, Dr. Crawford responded: "They are all interesting in their own way, but if I had to choose I would probably select an extremely rare denture collection from the 18th and 19th centuries; the first turbine (gearless) water-jet high speed dental engine; an early McTaggart casting machine or a hand-made wooden dental chair."

Anyone interested in donating to the museum is asked to contact Dr. Ralph Crawford at CDA headquarters in Ottawa, 1-800-267-6354. Income tax receipts are available, with certain restrictions, for museum donations.

RCDS Issues Infection Control Update

The Royal College of Dental Surgeons of Ontario (RCDS) has revised its infection control guidelines.

The revised guidelines, which took effect in January, are considerably more detailed than the one-page "Recommended Practices" released by RCDS in 1989.

In the "background to infection control" section, for example, the revised guidelines state: "The infectious disease process involves three essential components: (1) a susceptible host, (2) a causative agent, and (3) a portal of entry. By eliminating any one of these components, an infection cannot occur. This principle forms the foundation of an acceptable infection control strategy."

The guidelines continue to stress that two significant concepts – universal precautions and risk assessment – are inherent in any infection control strategy. Risk assessment is categorized in the following table:

Significant attention is given to the components of an infec-



tion control strategy. In this area, the guidelines address eight specific sections: screening of patients, immunization, hand washing, appropriate barriers, elimination of infectious agents, minimizing aerosol and splatter, handling of sharps and disposal of contaminated wastes.

Under the section on sterilization and disinfection, the guidelines state: "The College recognizes that it is impossible to sterilize all instruments and equipment in the dental operator." The choice of decontamination is then broken down into three classifications – critical, semi-critical and non-critical.

A separate section dealing with handpieces states: "The College recommends routine sterilization of handpieces between patients, but recognizes that not all existing handpieces can be sterilized. If a non-sterilizable handpiece is being used, high-level disinfection must be applied for the appropriate contact time between each patient use. Sterilization is, however, preferable as it accomplishes a much higher level of

antimicrobial kill and the results can be monitored."

The RCDS handpiece guidelines are very similar to CDA's: "The use of non-sterilizable handpieces is not recommended...handpieces which cannot be sterilized must be subjected to a high level disinfection."

Ontario's new infection control guidelines are indicative of the priority that all dental associations and licensing authorities – including CDA – have given to monitoring the entire infection control area. As new information and scientific knowledge become available, responsible professionals will continue to place paramount importance on maintaining the health and welfare of their patients.

Ottawa Dental Society Holds Mouthguard Clinic



Dr. Jack Lehrer, president-elect of the Ottawa Dental Society, was one of the participants in the society's annual mouthguard clinic, held last fall in the dental facilities of Algonquin College, Ottawa, Ontario. With volunteer services provided by local dentists, dental hygienists, dental assistants and dental technicians, mouthguards were provided for 145 high school students involved in contact sports.

Task Level	Exposure Type	Personal Barrier Precautions
1. (eg. surgery, periodontal procedures, etc.)	Involves the exposure to blood, blood-contaminated saliva, or non-intact tissue, especially when aerosolization or splatter is likely to occur	maximum security
2. (eg. examinations, radiographs, etc.)	Involves contact with intact oral mucosa, but not anticipated blood aerosolization or splatter	moderate (gloves recommended, masks and eyewear optional)
3. (eg. consultations)	Involves no exposure to blood, body fluids or tissues	not required

Scaling and Root Planing In the '90s

C.G. Ibbott, DMD, FRCD(C)

L.D. Carlson-Mann, SDT, RDH

ABSTRACT

Scaling and root planing are discussed as contemporary treatments associated with definitive periodontal treatment, presurgical preparation and periodontal maintenance. Case photos illustrate the clinical results obtainable with this procedure.

Scaling and root planing have been and continue to be the mainstays of periodontal treatment. These modalities are sometimes used as primary procedures and in the presurgical treatment of periodontal disease. They are also used as the major modalities in periodontal maintenance therapy.

Although supragingival plaque control can resolve redness and gingival bleeding, it has a marginal effect on probing depths and does not affect the bacterial composition in pockets deeper than 5.0 mm.¹ Subgingival mechanical instrumentation is therefore necessary.

Several studies have shown that subgingival instrumentation is very effective in pockets of less than 3.0 mm. In pockets ranging from 3.0 to 5.0 mm, the chances that deposits will not be removed are greater than the chances of success, however, and if the pocket is greater than 5.0 mm, failure is even more likely.²

While scaling implies the removal of subgingival plaque and calculus, root planing specifies the removal of cementum or surface dentin that is



C.G. Ibbott, DMD, FRCD(C)

rough or impregnated with calculus, toxins or bacteria. Endotoxin derived from the cell walls of gram negative bacteria is bound to the cementum of diseased roots. These substances are toxic to epithelial and fibroblast cells.³

Scaling and root planing have been shown to decrease the number of gram-negative organisms and increase the number of gram-positive rods and coccal species, a shift associated with periodontal health.⁴ An increased probing depth is often found immediately after therapy, before the onset of reduction due to over-instrumentation into the zone of periodontal fibre attachments. Changes in probing should be monitored at three to four weeks posttreatment. A long junctional epithelial seal develops over nine to 12 months as healing occurs.⁶

After root instrumentation, transient microflora shifts are found. Disease flora may approach baseline levels eight to

12 weeks after therapy⁷ (thus highlighting the need for ongoing maintenance). Therapy combined with even erratic maintenance may improve the prognosis of the teeth tenfold.

There are areas such as furcations and osseous defects where limited access impedes the removal of deposits by non-surgical means. There is also little potential for bone induction with scaling and root planing alone.

The use of chemotherapeutic agents has been increasing in the non-surgical treatment of periodontal disease, but they are adjuncts only, and do not take the place of traditional therapy.

In addition, the Nd:YAG Laser has been mentioned as a "new breakthrough" in the treatment



Fig. 1

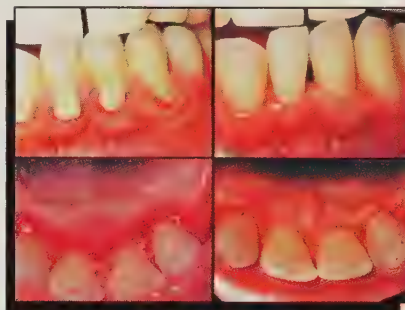


Fig. 2

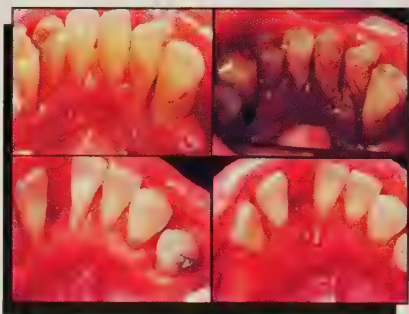


Fig. 3

of periodontal disease. Studies have indicated that the laser is ineffective in removing subgingival deposits, however. It has also been shown to burn off organic matrix, rendering a cementum surface unfavorable for fibroblast attachments. Lasers are not recommended for use on root surfaces at this time. Removal of the pocket wall is not of critical importance in the scaling/root-planing procedure, and purposeful curettage is not encouraged.

New instrumentation may improve the results previously obtained with scaling and root planing. Modified cavitrion tips (EWP-10 and EWP-10L, Dentsply International) are manufactured by Tony Riso Co. of Miami, Florida.⁹ New types of periodontal curets (Gracey Curvette Sub-O) certainly enable the instrumentation of areas that were previously inaccessible.

Indications for predictable results with scaling and root planing can be obtained in: marginal gingivitis; acute necrotizing ulcerative gingivitis (ANUG); moderate periodontitis with extensive gingival edema; and with the acute periodontal abscess. Scaling and root planing may also be used as a primary treatment in: the elderly, medically-compromised patients, patients psychologically unprepared for surgery, patients with deep pockets that are causing esthetic concerns, and extremely advanced cases for predictable results. The advantages of scaling and root planing include:

- Decreased gingival bleeding



Fig. 4

- Probing depth reduction with gingival recession
- Gain in probing attachment level
- Probing depths should be reduced by 1.0 to 2.0 mm.
- Disadvantages include:
- Limited application with pocket depth greater than 5.0 mm
- Limited access for furcation and bony defects
- Little potential for bone induction
- Very labor intensive
- Incomplete observation of root surface during treatment
- The use of proper instrumentation is mandatory
- Thick gingival tissue can mask inflammatory change

The seven cases illustrated by **Figs. 1 to 4** show inflammatory enlargement with spontaneous bleeding on probing. A dramatic response, with a reduction in enlargement and elimination of gingival inflammation, can be seen. Probing depth is markedly reduced with shrinkage. Cases 8 to 10, illustrated by **Figs. 4 and 5**, show minimal changes in the posttreatment color and texture of the gingiva. This is due to thick gingival tissue, which masks inflammatory change. Minor pocket depth changes have occurred and bleeding has disappeared, but other therapy will be required. Most cases are instrumented on a segment or quadrant basis, with an average time of six to 10



Fig. 5

hours required per full case. Local anesthetic is usually necessary.

Curettes, Universal and Gracey are the most efficient hand instruments for scaling and root planing with modified P-10 cavitrion tips as adjuncts. For root planing, the blade to tooth angulation is 45-65 degrees. For scaling, the blade to tooth angulation is 75-85 degrees. Root planing requires different strokes than scaling and less lateral pressure is used.

The general practitioner may choose to treat all areas with scaling and root planing initially. After initial scaling and root planing, areas which bleed and have residual depths of 46 mm may be identified as sites for surgery. The periodontist can usually make a decision based on probing depths, type of bone loss (horizontal or vertical), furcation involvement, and the type of tissue (edematous or fibrous), such that accurate decisions regarding appropriate types of therapy can be decided at initial examination.

Summary

With the explosion of new surgical techniques for the repair and regeneration of the periodontium, scaling and root planing have taken on an even greater importance. Where indicated, they are critical techniques for definitive care, for root preparation to accept the new surgical modalities and, most important, in maintenance therapy to maintain the ongoing health of the periodontium.

(Continued on page 15)

Changing Times In Dental Practice – One Man's View

Alastair MacLeod, DDS

The Past

Perhaps the principal characteristic of dental practice in days gone by (i.e. until the '60s) was its gentle pace. New graduates chose a location for their offices from a wide selection of possible sites, posted office hours similar to those found in business (9 a.m. to 5 p.m.) and began their practices with a near-certain chance of being "successful."

Technology was simple then, and it did not evolve nearly as quickly as it does today. Can anyone, for example, recall the chip syringe used to dry cavity preparations in days gone by?

My late father mixed amalgam in an open mortar and pestle, and finally – in the traditional way to get a perfect mix – in the palm of his hand. He did this for 50 years without showing any signs of mercury poisoning, not even in his 80s.

It was also a time when trust and ignorance were dominant in dentist/patient relationships. Many patients preferred to be "asleep" when a tooth was extracted. Dentistry obliged via "laughing gas," a euphemism for nitrous oxide without any accompanying oxygen. The dentist began this procedure by applying a face mask to the patient and turning on the gas. Then, when the patient's skin color reached the correct shade of blue, the dentist whipped off the mask and extracted the diseased tooth (or teeth), all within a window of opportunity that lasted for no more than a few seconds. A high level of dexterity was required to complete an extraction without breaking the tooth or damaging



Alastair MacLeod, DDS

adjacent tissues.

From years of experience, my father developed the theory that to extract well under these conditions, a dentist had to be physically well-coordinated and, in particular, capable of balancing lightly on the balls of his or her feet – rather like a professional boxer swaying from side to side to avoid his opponent's punches. He maintained that you had to keep all of your body's joints – from feet through shoulder, elbow, and wrist – pretty well locked rigid, so that you could pivot your body force from the balls of your feet to the hand holding the forceps. (A similar concept of physical principles was incorporated into the design of the Canadarm, one of the major components of the U.S. space shuttle.) At the same time, the tips of your thumbs and the index finger of the other hand, straddling the alveolus, telegraphed to the brain the critical news that bony expansion was starting.

My father's belief in the importance of balancing on the balls of the feet was strengthened by the fact that an associate in our practice, who was af-

flicted with flat feet, persistently broke patients' teeth. Whenever this happened, my father, who was administering the aesthetic, would put the patient "under" again, take the forceps from the associate, and retrieve the broken tooth. He concluded that one cannot extract well with flat feet.

Coincidentally, this theory was further underlined by the extraction ability of another associate, who was born with just one foot (he wore a prosthesis). Despite only being able to pivot on the ball of one foot, he was able to extract teeth quickly and well, while at the same time avoiding breakages. This convinced my father that a dentist with one good foot was better than one with two flat feet.

Similarly, my father believed that the dexterity required to extract teeth successfully under these challenging circumstances had little to do with strength – he was the smallest person in the practice. On the contrary, it had everything to do, in his opinion, with balance, judgement and digital sensitivity.

At the time, trust in laughing gas was not confined to the general public. My father had an anesthesiologist patient that he had treated since childhood. Even as an adult, when this individual needed an extraction he accepted nitrous oxide without any accompanying oxygen. Despite his professional knowledge, he chose to accept this method from my father without question.

A prime example of unwitting ignorance in times gone by was the use of radiology. Lead aprons and protective screens had not been invented, and exposure times were ticked off in multiples of a second. In those

early years, my father would hold the film in the patient's mouth while his assistant pressed the button. Although he received what probably amounted to a substantial amount of radiation from the 1920s onwards, it did not seem to result in genetic damage in our family. My sister and I were born later. She grew up to be a physician and I managed to get through dental school.

Dentistry was perceived by many aspirants to the profession as an ideal opportunity to be one's own boss. And old-time practice was well suited for the "one-man band" personality. The organizational needs of practice were relatively simple then. Dentists provided clinical treatment to the patients, and untrained persons were hired to provide assistant and receptionist services. Hygienists did not exist, and in the low-pressure atmosphere of the day, many dentists carried out many, if not all, stages of fabricating dentures.

Payments were mostly made in cash. Insurance payments, at best, were a minor component of most practices. My father opened his practice before the depression of the '30s. His initial concerns about his practice falling apart in that difficult time were belied by the fact that some patients just had to have treatment. They would produce some cash, or food, or something in kind if they were completely broke.

From the '40s onward, the demand for care was good in the sense that the low dentist/population ratio, which theoretically could have swamped the profession, was counterbalanced by the fact that a minority of the population could afford care. On balance, most dentists had little difficulty in establishing a healthy practice with little or no debt load.

Right up to the '60s, dentists could conduct the clinical side of their practice in an affable, low-pressure manner, while maintaining loose but adequate control on the front office.

The business side of practice was correctly perceived as not being very important.

Dentistry saw the profession as being both a science and an art. In my opinion, it was perceived more as an art than a science. Dental school deans, having satisfied themselves that applicants had a sound scientific understanding, then looked carefully at the whole person: how they got along with people, whether they had outside interests, and how they were perceived by their peers.

The public accepted their level of access to dental care in an amiable manner, even though dentist hours were frequently in conflict with patient work hours. They didn't mind trudging up a flight of stairs to the dental office, either. My father, whose office was located above a bank, saw virtue in this arrangement. "If they can walk upstairs, they must be fit for treatment," he said.

According to gossip, the gentle pace of old-style practice, with its rudimentary business management, also included diverting some fees directly into a back pocket from time to time, without declaring them as income. If this is true, it would be the perfect counter to business inefficiency.

To sum up, the past was characterized by solo practitioners functioning in an environment of self confidence, low pressure with considerable authority, and opportunities for choice in professional arrangements. The business side of dentistry was generally perceived as being relatively unimportant. When the idea of teaching practice management skills in dental school was raised, it was viewed with ambivalence, rather like the Victorians reluctance to discuss anything involving sex.

The Future - A Prediction

Two factors will dominate dental practice in the future: overhead will mushroom, and the public will demand service at times that are convenient to

them. Not only will new computers and electronics mean extra expenditures, but all technology will be subject to regular updating. Also, the public will expect six-day-a-week service, with an emphasis on regularly-available evening treatment. These factors, plus the expense and time spent out of the office for upgrading courses, and the impossibility of being competent in all areas of general dentistry, mean that most solo practices will disappear.

Brand-new group practices will take their place. While these practices will have many innovative features, some things will not change. Dentists will continue to have their "own" patients, and patients will continue to have their own dentist. Similarly, each dentist will work with the same team of assistants, hygienists and front office staff.

In other respects, however, the future practice environment will be radically different from the present. For example, the work week will be divided into two halves with one team of dentists and staff working, say, the first three days, and the second the next three days out of the same office. Rotations will change monthly to permit equal access by each team to week-ends. Through this double utilization of the same office, capital investment and overhead costs will be shared by several dentists.

One consequence of this arrangement is the opportunity for each dentist to select some part of treatment and pursue it to a very high level of knowledge and skill. Group practice experience today indicates that patients readily accept in-office referrals, but only accept external referrals with reluctance.

In the future, patients will be confident knowing that their treatment is being delivered under one roof. Dentists will receive ample time off to enjoy private life and participate in continuing education. During this off-duty time, if one of their patients has an emergency, a colleague in the group will see the patient

promptly.

The business side of practice, disliked so much by today's dentists, will be taken care of by a professional business manager. The dentist of the future will use the time and energy saved through this arrangement to treat more patients, and his or her short work week will generate at least as much income as the current Monday to Friday routine. Because of shared utilization, group practices will be able to afford new technology as it emerges. They will also possess their own in-office laboratory, as patients will like the immediacy and speed of this service, as well as having the technician come into the operatory to assist the dentist in decision making.

But the biggest change will involve human relations in the office. Teamwork and shared responsibilities will be the new order of the day. Dentists focused on providing high-tech clinical procedures in the operatory cannot simultaneously keep tabs on everything else happening in the practice, especially around the front desk. While a professional business manager will coordinate the overall working of the office, the moment by moment details of each dentist's practice will be handled by a registered dental assistant (RDA). In the future, the role of the RDA will be critical to the smooth functioning of the team, rather as oil keeps an engine from overheating. Specifically, the RDA will have to learn the new procedures, keep the dentist informed on what is going on around them, liaise with the front desk, and field calls about treatment from both patients and insurance companies.

Faced with much to learn, new graduates will sign up for a year with well-run group practices to work with an experienced dentist. In the same way that undergraduates prefer to question teaching assistants rather than the professor, new graduates will depend on experienced RDAs to answer many of their questions about tech-

niques and procedures. Therefore, experienced RDAs with good communication skills will command a healthy salary.

Dentists will share in the ownership of these group practices, and keep in touch with each other and the business manager through regular weekly meetings. Lunch hours may well prove to be the most popular time for these sessions. In addition, monthly staff meetings, for everyone who works in the practice, will be chaired by the business manager. As group practices become the backbone of Canada's treatment delivery system, dental school admission committees will make sure applicants are comfortable working in a team environment.

In the future, group practices

formed by dentists already familiar with the experiences of the past will benefit greatly from the fresh outlook provided by newcomers to the practice. Such teamwork will provide this type of practice with the greatest chance of continuing indefinitely, as it will be well equipped to adapt to a changing world. And if there is one thing that is predictable about the future, it is the prospect of change, and then more change.

Dr. Alastair MacLeod is a general practitioner in Cape Breton, Nova Scotia, and a former teacher of practice management at Dalhousie University.

Scaling and Root Planing...

(Continued from page 11)

References

1. Badersten, A., Nilveus, R. and Egelberg, J. Effect of non-surgical periodontal therapy. I. Moderately advanced periodontitis. *J Clin Periodontol* 8:57-72, 1981.
2. Caffesse, R.G., Sweeney, P.L. and Smith, B.A. Scaling and root planing with and without periodontal flap surgery. *J Clin Periodontol* 13:205-211, 1986.
3. Aleo, J.J., DeRenzis, F.A., Farber, P.A. et al. The presence and biological activity of cementum-bound endotoxin. *J Periodontol* 45:672-678, 1974.
4. Slots, J., Mashimo, P.C., Levine, M.J. et al. Periodontal therapy in humans. 1. Microbiological and clinical effects of a single course of periodontal scaling and root planing and of adjunctive tetracycline therapy. *J Periodontol* 50:495-509, 1979.
5. Eccheverria, J.J. and Caffesse, R.G. Effects of gingival curettage when performed one month after root instrumentation. A biometric evaluation. *J Clin Periodontol* 10:277-286, 1983.
6. Kaldahl, W.B., Kalkwarf, K.L., Patil, K.D. et al. Evaluation of four modalities of periodontal therapy: Mean probing depth, probing attachment levels, and recession changes. *J Periodontol* 59:783-793, 1988.
7. Magnusson, I., Lindhe, J., Yoneyama, T., et al. Recolonization of a subgingival microbiota following scaling in deep pockets. *J Clin Periodontol* 11:193-207, 1984.
8. Trylovich, D., Cobb, C., Pippin, D., et al. The Effects of the Nd: YAG Laser on in Vitro Fibroblast Attachment to Endotoxin-Treated Root Surfaces. *J Periodontol* 63:626-632, 1992.
9. Holbrook, T.E. and Low, S.B. Power-driven scaling and polishing instruments. In: *Clark's Clinical Dentistry*, Philadelphia, J.B. Lippincott Co., 1989, Chapter 5A.

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Ocular Injuries in Dentistry: Their Etiology and Prevention

Laura L. Daniels-Way, RDH

Brian W. Way, DDS, MSD

ABSTRACT

Every dentist should be aware of the potential for eye injuries to occur in the dental office. This article discusses the various eye injuries that may arise, the etiology of potential injuries and the measures that health care professionals may implement in order to prevent serious injuries from occurring.

The best protection against injury is prevention. By educating staff members on preventative measures, dentists can greatly reduce the potential for injury. Proper instrument exchange, away from the patient's eyes, and the use of protective eye wear for both the patient and all staff is recommended.

Introduction

The idea of using eye protection in the dental office, for both the patient and the dental team, is not new. In fact, the literature is replete with articles and references on its importance.²² Still, most dental offices do not routinely use eye safety wear and, to make matters worse, some routinely remove a patient's own eyeglasses prior to treatment.

Accidents resulting in injury to the eyes of the dentist, hygienist, auxiliary and/or patient can occur at any time, even during the most routine dental procedures.² These episodes can result in nightmarish episodes of pain, partial or complete loss of sight, disability and lawsuits. It has been estimated that at least 90

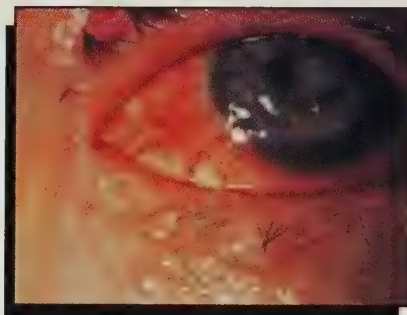


Fig. 1: Corneal abscess

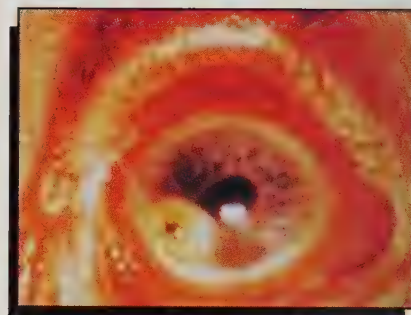


Fig. 2: Foreign body

per cent of all eye-related injuries could have been prevented if eye protection had been worn in the operator.¹³

This article will discuss the various types of eye injuries that can occur, their etiology and methods of prevention.

Etiology of Ocular Injuries

In general, the risk of ocular injuries in the dental office, as well as the occurrence of injury, can be traced to five broad areas:

1. Passing and manipulation of instruments and materials
2. Ultra-speed instrumentation (air turbine)
3. Scaling and prophylaxis
4. Light radiation sources
5. Miscellaneous treatment procedures.¹³

Passing and Manipulation of Instruments and Materials

Current trends in dental treatment procedures have increased the probability of ocular injury to the patient and dental team. In the past, patients were positioned in the chair at a

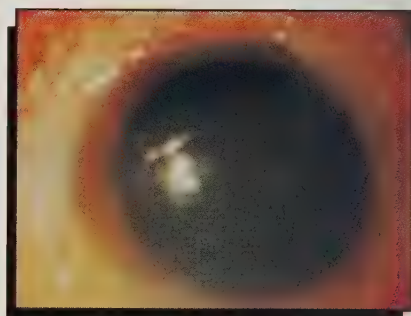


Fig. 3: Alkaline burn

15- to 45-degree angle, with the bracket table in front of them. With the advent of the contour chair and sit-down, four-handed dentistry, however, the patient is now placed in a supine or semi-supine position, which results in his or her eyes being exposed to falling instruments and materials more often. The tray may be behind, at the side, or over the patient's head. In this position, instruments can more readily be pulled from the tray onto the patient's face. Furthermore, the operating team sit close by the chair, almost hovering on each side of the patient's head and shoulders. In these positions, there is a far greater likelihood for ocular injury to occur.^{2, 13}

Ultraspeed Instrumentation

The routine use of the air turbine handpiece has a tremendous capacity to produce eye injuries. This ultraspeed instrument can turn tooth structure, filling material, calculus or bone spicules into high-speed projectiles, ejecting them from the mouth at 31-feet per second, which is sufficient force to chip eye glasses or cause severe damage to the eye. Injury can also occur from dislodged or fractured rotating instruments, such as burs.^{2,13,14}

Scaling and Oral Prophylaxis

In the initial phase of cleaning the patient's teeth, when gross calculus is removed with the ultrasonic scaler, particles of calculus can be ejected from the patient's mouth toward the faces of the operators, assistant or patient. Although less force may be applied in the removal of subgingival calculus with fine scalers, the debris can still be expelled at high velocity because the scaler tip creates a spring action against the root structure. These smaller fragments are more difficult to remove from the eye than larger pieces of supragingival calculus. Equally important, the rough, irregular, porous surfaces of calculus are laden with plaque bacteria, and can cause a serious infection if they strike an unprotected eye.¹³

The oral prophylaxis procedure uses various cleaning and polishing pastes. These may contain essential oils or other ingredients that are extremely irritating to delicate eye tissues. Flour of pumice will readily abrade corneal tissues. In addition, many pastes also contain various anticariogenic agents, some of which have an adverse effect on the cornea and conjunctiva.

Rubber cups and brushes eject both prophylaxis paste and saliva laden with microor-

ganisms, each of which has the potential to cause ocular injury or infection.

Eye Damage from Light Radiation

There is a growing body of evidence to suggest that environmental and occupational light sources may have a damaging effect on the human retina. The light-curing units currently used in dentistry are known to transmit some ultraviolet (365 to 367 nanometres) and blue light (450 - 470 nm). Near ultraviolet radiation (300 to 400 nm) has been shown to play a role in human cataract development. Studies have also shown that exposure to blue light produces cumulative retinal changes. Blue light exposure reduces the response of the retina's blue sensitive cones through photochemical damage.^{15,20}

It has been calculated that the safe viewing time for some light-curing units is less than one second (unfiltered light, direct viewing). In addition, the clinician's eyes may be damaged by viewing the light reflected off the patient's enamel during light curing, especially if this occurs over time, when cumulative effects may become more important than an isolated exposure.

Miscellaneous Treatment Procedures

There are reports of ocular injuries occurring as a result of a number of other, miscellaneous dental procedures. For example, instrument breakage or tooth fragmentation during extraction procedures can result in particles of the tooth or instrument being propelled from the mouth at high velocity. Glass anesthetic carpules have been known to explode, sending particles of glass and solution into the patient's eyes. Rubber dam clamps, thought to be securely applied, have suddenly become dislodged, striking the operator with considerable force in

the face or eyes. The force is due to the spring action of the clamp and the "slingshot" effect of the rubber dam.

Types of Injuries That May Occur

The most frequent ocular injuries that may occur as a result of accidents in the dental office are as follows:

1. Corneal Abrasions

These are the most common ocular injuries sustained in the dental office. They occur when a portion of the epithelium is removed from the cornea as a result of either materials, instruments or other foreign bodies coming in contact with the cornea. Injuries that involve the centre of the cornea are especially serious, if deeper than the epithelial layer, because scarring then ensues (**Fig 1**).^{1,14}

Infrequently, a permanent condition known as a recurrent erosion syndrome will develop following a corneal abrasion. This condition is caused by damage to the underlying basement membrane of the cornea. As a result of poor healing of the epithelium to the basement membrane, episodes of erosion associated with severe pain and morbidity occur.¹⁴

2. Foreign Bodies

Foreign bodies (**Fig. 2**), which may be a piece of tooth substance, restorative material fragment, calculus or part of an instrument, are very common. Foreign bodies may result in more serious corneal injuries such as keratitis if they are not removed promptly.

3. Hyphema

Hyphema, or bleeding into the anterior chamber of the eye, may result after even a seemingly mild blow to the eye. It is the result of a ruptured blood vessel. Blood may be seen collecting against the lower one-third of the iris. Glaucoma or blood staining of the cornea may result if the patient does not receive prompt specialized attention.¹

4. Trauma Iridocyclitis

Traumatic iridocyclitis, a significant inflammation of the iris and ciliary body, may result after a seemingly insignificant incident such as a minor blow to the eye, contact with a foreign body or a corneal abrasion. It is a delayed response to trauma, beginning days after the initial insult, and therefore not likely to be seen by the dentist. Symptoms include extreme redness of the eye, decreased pupil size, decreased vision, pain, light intolerance and tearing.^{1,14}

5. Penetrating Wounds

Although this injury does not occur as frequently as the others previously discussed, it is infinitely more serious. It can result in a retained intraocular foreign body, which can initiate severe sequelae. Retinal detachment, cataract formation and endophthalmitis (devastating inflammation of all interior eye structures) can occur. Siderosis, a late-occurring syndrome caused by retained foreign bodies of iron or steel, can also occur. Similarly, the retention of copper, brass and bronze materials may cause degenerative changes.¹⁴ A disastrous complication of penetrating injuries to the eye is sympathetic ophthalmia.¹² In this condition, which is suspected to be related to the release of antigens in the pigmented portion of the eye, a violent inflammation occurs, not just in the injured eye but in both eyes. This condition can last for years.

Foreign bodies may penetrate the globe of the eye without causing significant symptoms, and only months later lead to degenerative changes that could result in blindness. The patient usually feels something has entered his or her eye, but it may not cause pain.¹ When a patient makes such a statement, even if no visible evidence of injury is found on examination, a penetrating foreign body injury should be suspected. Special techniques (including ultrasonography) are frequently necessary to make an accurate diagnosis.

6. Chemical Injuries

Chemical burns of the eye by

alkali (**Fig. 3**) or acid are among the most urgent ocular emergencies. The materials most likely to be encountered include ortho-phosphoric acid, varnish, sodium hypochlorite, bleaching agents such as hydrogen peroxide, chloroform and resins. The extent of permanent injury is related to the nature and concentration of the material contacting the eye, and the time that elapses before lavage and decontamination occur.^{1,14} In general, alkali burns are usually more severe than other types of chemical burns.

Emergency Care for Ocular Injuries

If injury should occur, prompt emergency care will help to minimize ocular damage, and the dentist's potential liability if a malpractice suit ensues.

Should a foreign body enter the eye's orbit, it needs to be removed (if possible, this should be accomplished by irrigation using tap water and a syringe or cotton-tipped applicator).¹

Chemical injuries cause the most urgent ocular emergencies, because the extent of damage is related to the length of time the agent is in contact with the tissue. Immediate irrigation with copious water or saline should be instituted for at least five to 10 minutes. The eye lids should be held apart, and irrigation can be accomplished with a large disposable plastic syringe. It is important not to waste time preparing or looking for specific neutralizing agents. Plain tap water should be used immediately,^{1,3,14} and particulate matter should be removed from the lower lid cul-de-sac.

In all cases of ocular emergency, a firm occlusive dressing (two sterile pads such as Curity No. 2841, for example) should be applied over the patient's closed eye lids, and then taped tightly with three or four strips of one-inch tape six- to seven-inches long, extending from the forehead to the cheek.¹⁴ The patient should then be immedi-

ately referred to an ophthalmologist for evaluation and treatment. It may be appropriate for the dentist or a staff member to escort the patient to the specialists' office or the hospital emergency department.²

Prevention of Eye Injuries

As mentioned earlier, the best protection against ocular injuries is prevention. Preventive techniques should not only involve the patient, but also the dentist, dental assistant and the hygienist.

First, every member of the dental team should be aware of the possibility that an eye injury may occur, and of the serious consequences associated with mishaps. Instruments, dental materials and/or chemicals should never be passed over the patient's face.¹¹ Instead, the transfer of instruments should always be completed to one side or behind the head of the retroclined patient.

Safety glasses should be stocked in all treatment areas. Assistants, hygienists, dentists and patients should wear them during all procedures, even during a prophylaxis or appliance adjustment. Use the large type with wrap-around lenses, which aid in preventing foreign bodies from entering the eye through the lateral border of the glasses. Where possible, the patient may wish to wear his or her own glasses. It may be preferable to provide safety glasses for these patients as well, however, particularly if they regularly wear gas permeable (rigid) contact lenses. Safety glasses provide a broader field of protection and are made of a more shatter-proof plastic than regular eye glasses. Polaroid tinted lenses are preferred for patient safety glasses, to give the patient added protection from the operatory light and as an added safety factor if a resin-curing light unit is being used.¹³ Soft-clipped Polaroid clip-ons are available.

The routine hygiene and sterilization of patient glasses allows

them to be used repeatedly.² Most patients will react to them positively and express appreciation for your concern for their comfort and protection.

An appropriate filter, such as the Liteshield 500, Corning CPF 511 or Premier Cure-shield should be used to shield the operator and the assistants from the light pipe of a resin curing unit.¹⁵ Plastic Younger lenses, which are less expensive than glass lenses, may also be used. All of these filters will effectively screen out all rays below 500 nm, thereby removing the blue and ultraviolet portion of the spectrum. Until more is known about the long-term effect of exposure to intense light sources weighted in the blue end of the spectrum, it would seem prudent to guard against any possible adverse effects.

When general anesthetics are administered to a dental patient, the patient should remove his or her contact lenses, where applicable, and the patient's eyes should be firmly closed with tape. Optical-grade saline should be available for those patients who wish to reinsert their contact lenses following the procedure.

A significant reduction in the number of accidents caused by debris being ejected from the patient's mouth can be attained by using copious amounts of coolant spray, which appears to "wet down" the material, as well as through the continuous use of high-volume suction in close proximity to the cutting or ultrasonic scaling site.¹³

Summary

There is a potential for serious ocular injuries to occur in the dental office from eye contact with both instruments and/or dental materials.¹ Practitioners must recognize all the risks involved when they, their operator team, and their patients are unprotected from the hazards inherent in even the simplest dental procedure.

Serious injury to the eye could end a dental career or, if a patient is injured, result in a lawsuit.¹³ Vision is much too important to be ignored. Dentists must protect their own health as well as that of their patients.

Most dental-related eye injuries can be prevented if the dentist is aware of the potential for injury to occur. Exchanging instruments away from the area of the patient's eyes, and insisting that safety glasses (or shields) are worn by the patient and dental staff during all procedures is imperative.¹

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References

1. Cooley, R.L. and Barkmeier, W. Prevention of eye injuries in the dental office. *Quintessence Int* 2025:953-960, 1981.
2. Miller, I.B. The unseen risk in your office. *Dent Man* 16:38-41, 1976.
3. Colvin, J. Eye injuries and the dentist. *Aust Dent J* 12:453-456, 1978.
4. Casey, D.M. Eye injuries in the dental office. *JADA* 91:502-503, 1975.
5. Colvin, J. The care, protection and utilization of dentists' eyes. *Ann RACDS* 5:76-80, 1977.
6. Laroto, D.C. Emergency treatment and prevention of eye injuries in the dental practice. *N.Y. State Dent J* 32:353-358, 1966.
7. Specialist warns about hazards to eyes in dental procedures. *Dent Surv.* 47:67 (May), 1971.

8. Folk, I.C. and Lobes, L.A. Intraocular complications. *JADA* 102:161, 1981.

9. Hales, R.H. Ocular injuries sustained in the dental office. *Am J Ophthalmol* 70:221-223, 1970.

10. Mayberley, M. Protection of the eyes of the recumbent patient. *Br Dent J* 124:205-206, 1968.

11. Belting, C.M., Haberfelde, G.C. and Juhl, L.K. Spread of organisms from the dental air rotor. *JADA* 68:648-651, 1964.

12. Goldlist, G.I. Ocular injuries in dentistry. *Ontario Dentist* 55:21-22, 1978.

13. Hartley, J.L. Eye and facial injuries resulting from dental procedures. *Dent Clin North Am* 22:505-515, 1978.

14. Cooley, R.L., Cottingham, A. and Abrams, H. Ocular injuries sustained in the dental office: methods of detection, treatment and prevention. *JADA* 97:985-988, 1978.

15. Jordon, R.E. *Esthetic Composite Bonding*. B.C. Decker Inc., Toronto, pp. 314-327, 1986.

16. Adshead, M.C. Guarding against eye injuries. *Dent Assist* 3:19-21, 1984.

17. MacLean, D.F. Eye protection in the dental office. *Canadian Forces Dental Services Bulletin*. 2:14-15, 1982.

18. Bourne, J. Eye protection for patients undergoing oral surgery. *Br J Oral Surg* 18:136-137, 1980.

19. Millstein, C.B. Protective industrial eye wear for the dental patient. *J Dent Pract Admin* 1:28-30, 1984.

20. Callen, A.P., Chou, B.R. and Ahmedbhai, N. Light-curing units and protective filters. *J Canad Dent Assoc.* 52:939-941, 1988.

21. Roydhouse, R.H. Occupational hazards for dental personnel: a review. *J Acad Gen Dent* 25:53, 1977.

22. Casey, E.P. and Casey, D.M. Patient eye protection in the dental office. *N.Y. Dent J* 45:460-46, 1929.

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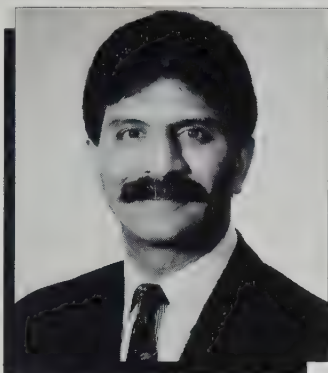
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Economics of the Associate

Imtiaz Manji, B.Sc.,
President of ExperDent

If you are considering selling all or some of your practice, bringing on an associate makes sense. Similarly, if your practice is very busy or you want to decrease your workload, an associate relationship may provide the answer. But bringing on an associate without long-term planning can cause damage to your practice.

Even when an associate relationship begins with the best intentions, too many practices end up in the worst possible situation: The associate leaves the practice, taking a significant number of patients with him (or her), and sets up a new practice a few miles away or even just across the street. And the situation can be almost as disastrous when the associate leaves the practice without taking patients – if you, as a single practitioner, cannot handle all your patients' needs.

Perhaps the most common misconception about associates is their profitability. A good associate will eventually improve practice profitability, but most practices incur a decrease in profitability at the start of an associate relationship. Since many associate candidates are recent dental school graduates, they do not have the experience or chairside efficiency to produce at the same level you do. In time, the productivity of these "green" associates should increase until it approaches your hourly level, but this doesn't happen overnight.

For example, let's look at a typical associate compensation arrangement, where the associate receives 40 per cent of collections after laboratory costs have been recovered. (Actually, recent trends

start as low as 25 per cent.) My experience with associates has shown that the typical production that a dentist can expect from an associate in the first few months is around \$10,000. After a few months, the associate should be producing in the \$16,000 to 20,000 range. For the purpose of this example, I'll assume that the associate produces \$18,000 in the very first month. Here are some basic numbers.

Production (per month)	\$18,000
less three per cent uncollectible	540
less eight per cent lab costs	1,440

Compensation Base	16,020
less 40 per cent associate amount	6,408
less six per cent supplies	1,080
less assistant salary	2,500

Gross Profit (per month) \$6,032

In this example, gross profit does not account for all of the costs connected with the associate. Many incremental expenses are difficult to quantify, but they exist nonetheless. You may have increased your administration costs, especially if you've expanded your practice hours to accommodate the associate's schedule. If you've had to equip an operator or expand your facility, these costs will come straight out of your profits. You also need to consider the increased management overhead that you have to deal with. Your start-up costs for legal negotiations and professional advice must also be ac-

counted for. Moreover, if you place an associate in your practice to cut back the number of hours you work, this further decreases your net profitability, since you're offsetting current production. Your gross profit can quickly dwindle to \$2,000 or \$3,000 per month once all these costs are taken into consideration.

As a businessperson, you should also allocate some of your non-incremental costs to the associate practice. For example, a portion should be allocated toward the fixed expenses of the practice. Similarly, part should go toward a reasonable return on your investment in your facility and equipment. Unless you are careful to control your costs, the financial statements for your associate venture will probably be written in red ink. You have to ask yourself if taking on an associate is really worth it, when, at best, it will generate another \$30,000 per year profit.

Besides the financial risk, there are other risks inherent in taking on an associate. You have to take a good hard look at your patient base. Is it large enough, with sufficient new patient flow, to support two practitioners? You also have to look at the associate. How is the quality of his or her work? Does this individual have a good chairside manner? Does he or she hurt the patient? Will he or she destroy referral sources that you have worked hard to build up?

The relationship that develops between the associate and your staff is also of critical importance. Will staff loyalty be split? Will the



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associate be comfortable if you continue to manage the staff and practice? All these questions are fundamental.

Even if the financial projections are acceptable, and you're satisfied that you've resolved all the above risk questions, you're still vulnerable to the biggest liability in associate relationships – the associate leaves the practice, taking a patient base with him (or her), and sets up a practice in direct competition with yours. Even though your associate agreement may contain restrictive covenants, prevailing wisdom doubts the enforceability of these legal clauses. From the start, regardless of your location and associate agreement, you should accept the fact that your associate could easily become your competitor.

Your future may very well depend on how well you have protected the goodwill you have invested in your practice. Goodwill is the accumulated value of your patient base, referral sources and professional reputation. When an associate comes to work for you, they have no goodwill in your practice unless they bring a patient base with them. Over time, you provide them with work, direct new patients to them and help their practise of dentistry to grow. After a year, the associate will likely be receiving his or her own referrals. Keep in mind, even though these referrals are coming to the associate, they contribute to the value of your goodwill in the practice.

The associate, by definition, owns none of the practice's goodwill. It is easy to maintain this distinction after only six months or a year, but what happens when the associate stays with your practice for an extended period of time? After three or four years, the associate may challenge your ownership of the practice's goodwill. This argument may have some merit. I've come across many associates who have worked hard and diligently for years to build a practice, only to have their contributions go unrecognized. If this happens, a falling out may ensue and the associate may leave, taking patients with him (or her) to a new practice.

All the goodwill in your practice will be mixed up and then split apart. In the end, you will have suffered a significant loss in the value of your practice. Again, you must ask yourself if this risk is worth taking when all that you can expect to gain is a couple of thousand dollars a month. Clearly, the answer is No.

The vast majority of associate candidates are either recent graduates or more-experienced practitioners without the capital and credit prerequisites to establish their own practices. Since the cost of launching a new dental practice is tremendous, the only way these dentists can practise dentistry is to associate with an established practice.

For the recent graduate, associating with an established dentist provides a unique mentoring experience. As an associate, this individual is afforded the opportunity to master clinical skills, improve chairside efficiency, develop patient management techniques, and participate in practice and staff management. The recent graduate understands the importance of these skills and uses his or her time as an associate to master them. He or she usually understands that these skills are necessary to successfully establish a practice.

Since the financial risk in the associate relationship is borne by the senior dentist, associates hone their clinical and management skills at your expense. Insulated from the large fixed costs of operating a dental practice, associates have the luxury of being able to ignore profitability if they choose to do so. Their motivation is in direct conflict with your motivation, which, for the most part, is to increase profitability. Before any associate relationship can be formed, you and the associate must find common motivational ground. That common ground is found only in your long-term goals: to increase profitability, maximize the value of the practice and eventually realize that value by selling all or a portion of it to another practitioner. The long-term goals for the typical associate are to improve his or her clinical and management skills, so-

lidify his or her financial position and eventually buy into a practice.

Therefore, for both yourself and the associate, the most logical place to begin any negotiations is from a buy-in perspective. The conditions, method of valuation and time line for the buy-in should be engraved into the associate agreement. This meets both your long-term objectives and recognizes and protects, from day one, the value of the practice's goodwill. Any associate agreement that does not define the framework and time line for a buy-in is foolhardy, since it leaves you exposed to a loss of goodwill if the associate leaves the practice.

By undertaking a buy-in process at the start of the associate relationship, both you and the associate are properly motivated to protect and increase the value of the practice. As the senior dentist, you will have a vested interest to promote the growth of the associate's practice. Basically, the growth of his or her practice increases your goodwill and causes the associate to recognize and participate in the profitability of the entire practice. The associate, knowing that he or she will eventually buy into the practice, is motivated to build the practice's value and health. This individual understands that his or her future career and financial security are dependent on personal performance.

In summary, I recommend that you take the following steps when considering an associate in your practice:

■ Examine your practice

Look at your patient base, new patient flow and facility. Estimate your initial and ongoing costs. Project your profitability for the first year. Consider a worst case scenario.

■ Find the right associate

Look for someone with the same clinical and career outlook as you. Remember, this person will eventually be a partner in your practice. If you can't agree on patient treatment needs or long-term career objectives, you'll likely disagree on small daily management issues.

(Continued on page 247)

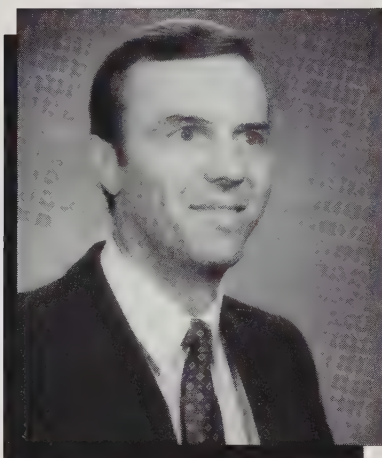


Restrictive Covenants – Everything You Wanted to Know but Were Afraid to Ask

H. Jack Stockton, DMD, CFP, MBA

Most dentists have heard the story of at least one “good old Dr. Doe.” Every version of the tale is more or less the same. Dr. Doe, a few years away from retirement, goes out of his way to take on a new dental graduate as an associate. He refers hundreds of patients to the young associate, on the assumption this individual will purchase the practice when Dr. Doe retires. But a few years later, the associate “rewards” Dr. Doe’s generosity by relocating to a brand new office directly across the street. Needless to say, Dr. Doe is devastated – both emotionally and financially. And since Dr. Doe failed to include a restrictive covenant in the associate’s agreement, he is powerless to do much about this tragic turn of events.

The intent of this article is to help dentists to avoid finding themselves in a situation similar to Dr. Doe’s. Restrictive covenants in agreements between principal and associate dentists will be discussed under the following headings: what is a restrictive covenant?; the need for restrictive covenants; the current legal status of restrictive covenants; key elements to enhance the likelihood of the enforceability of restrictive covenants; remedies available to the principal for breach of a restrictive covenant; and measures to reduce the need for court action.



Dr. H. Jack Stockton

Although the circumstances are different, many of the principles discussed in this paper also apply to restrictive covenants between dentist partners and purchasers/vendors.

What is a Restrictive Covenant?

A restrictive covenant is a clause contained in an agreement between two parties for the intent of prohibiting one party from doing something that would be detrimental to the interests of the other party.¹ In principal/associate agreements, for example, a restrictive covenant could state that the associate dentist is prohibited from practicing dentistry (other than in the principal’s office) within a certain radius of the principal’s dental

practice. This clause would remain in effect during the term of the agreement, and for a defined period of time following the departure of the associate dentist from the principal’s dental practice.

Many principal/associate agreements also contain a clause stating that the charts of patients seen by the associate dentist, during the term of the association agreement, belong to the principal dentist. As such, these charts must remain in the principal’s office on termination of the principal/associate agreement. Some restrictive covenants go even further, and state that the associate, on termination of the agreement, is prohibited from soliciting the principal’s patients in any way, shape or form.

The Need for Restrictive Covenants

Today, given the difficulty of building a busy dental practice in most North American cities, a principal dentist would be foolhardy not to have an associate dentist sign a restrictive covenant. Over time, dentist/patient relationships develop into strong interpersonal bonds. And when a dentist relocates his or her office, most patients will follow the dentist to the new location, even if the new office is miles away.

Because it takes time for strong dentist/patient bonds to develop,

the longer an associate practises in a principal's office, the greater the potential loss of patients from the practice should the associate relocate nearby. For instance, it is unlikely that an associate dentist would take many patients away from the principal's practice should he or she relocate within the first six months of an associateship. However, it is very likely that many patients would leave the principal's practice if the associate relocated nearby after working in the practice for five years.

The goodwill paid by the dentists purchasing practices in large Canadian cities during the past few years is probably in the range of \$40 to \$100 or more for each patient successfully transferred from the vendor's practice to the purchasing dentist. Therefore, the financial cost of not having a proper restrictive covenant in place can be very significant.

The Current Legal Status of Restrictive Covenants

Since a restrictive covenant is in restraint of trade, generally such a covenant is illegal (and therefore void). However, there are certain circumstances where a restrictive covenant is permitted. Principal and associate dentists should be aware of these circumstances.

In Canada, the number of reported court cases involving restrictive covenants between dentists is very limited. Most of the stated legal opinions on these restrictive covenants were based on cases involving restrictive covenants between employers and employees in other businesses. Also, it appears that the enforcement of restrictive covenants varies from jurisdiction to jurisdiction. In the United States, for instance, where many more dental cases have been heard, the enforcement of restrictive covenants varies dramatically from state to state.² Most lawyers would agree that each case is unique, and that there are no guarantees on how a given case might be decided.

When the courts consider the circumstances of a case to decide if a restrictive covenant should be

enforced, they generally attempt to determine two things: is there a legitimate interest to protect; and is the restriction reasonable in the circumstances? It is up to the principal to prove the validity of the restraint.

Legitimate Interest to Protect?

Merely wishing to restrict future competition from the associate is not enough. The principal must also show that he or she has a legitimate interest to protect. In various businesses, restrictive covenants between the employers and employees, related to the protection of trade secrets and customer lists, have been enforced by the courts. Furthermore, the courts have determined that the patient-doctor contact is important for the economic viability of a professional practice. In most cases involving dentists, it has been held that the principal has a legitimate interest to protect. This is substantiated by the fact that dentists are now paying very significant sums of money for the rights to patient charts and practice location (i.e., goodwill) when they purchase an existing practice. The goodwill associated with the sale of an average dental practice in a large Canadian city is often in the \$50,000 to \$125,000 range. In those areas of the country where the goodwill associated with the sale of a dental practice has little value (e.g., certain rural areas), it stands to reason that it would be more difficult for the principal to prove that there is a legitimate interest to protect.

Restriction reasonable in the circumstances?

The next criterion examined by the courts is whether the restriction goes beyond protecting a legitimate interest. One test for this criterion is to determine whether the covenant is wider than the scope of the practice. For example, to restrict an associate who wished to leave a principal's specialty orthodontic practice from practising periodontics or oral surgery would usually be wider in scope than required to protect the legitimate interest of the principal.

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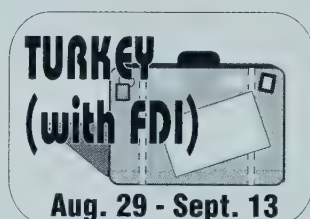
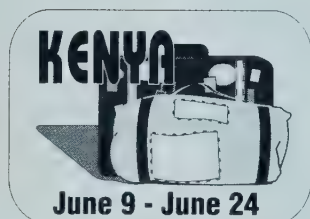
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The courts will also look at the geographic and time restrictions to determine if they go beyond what is required to protect the principal's legitimate interest. In effect, the principal dentist may only limit the geographic scope of the associate to the area from which the principal's practice draws its patients. Therefore, a reasonable geographic restraint will vary from case to case. It will likely be much larger in the case of a rural practice (perhaps 25 miles), than for an urban practice in a large metropolitan area such as Toronto (perhaps four or five miles). Similarly, a reasonable geographic restraint for a specialty practice would likely be much wider than for a general practice. The time restriction must also be reasonable, given the circumstances of the case. An unlimited time restriction would be unreasonable. However, the courts have upheld time restrictions as long as five years for professional practices.³

Some authors feel that if a restrictive covenant is found to be unreasonably wide, the courts would throw the case out. As a result, no restriction would apply. But others believe that the courts would reduce the restriction to what they determine is a reasonable geographic and time restraint.

To be found legal, a restraint must not be unduly harsh, nor prevent the associate dentist from earning a living in the future. For example, the courts would be almost sure to find that a restrictive covenant forbidding a former associate from practicing anywhere in a given province was unduly harsh. Similarly, the courts would be unlikely to accept a situation where the principal dentist unilaterally terminated the associate agreement without cause, and then tried to enforce its restrictive covenants against the dismissed associate.

Another important test used by the courts is to determine whether the restriction is reasonable from the standpoint of the public good. Any restriction that would be injurious to the public would probably not be upheld by the courts. For instance, if there was an extreme shortage of endodontists in a given

city, it is unlikely the courts would enforce a city-wide restriction on an associate endodontist leaving a group practice in that city.

When it comes to the ownership of patient charts in principal/associate relationships, the courts have made it quite clear that the principal dentist owns the charts, unless there is a written agreement to the contrary. However, the welfare of the patient comes first. If one of the principal's patients chooses to see the associate dentist, and requests that his or her records be forwarded to the associate's new office, the principal dentist is obligated to provide copies of the patient's clinical records to the former associate dentist.

The issue of patient solicitation, i.e., the associate pursuing patients he or she had seen in the principal's office, is not so clear. Again, the guiding factor is the welfare of the patient. There is no doubt that patients have the right to know how to contact the former associate should they inquire at the principal's office. However, a restriction against the associate's direct solicitation of the principal's patients by mail or telephone might be upheld by the courts. Restriction against a general relocation announcement by an associate dentist, in the newspaper for example, would likely not be upheld.

Key Elements To Enhance the Likelihood Of Enforceability Of Restrictive Covenants

First and foremost, the covenant should be in writing. Although a verbal agreement is a valid contract, from a practical standpoint it is extremely difficult to prove and enforce a verbal restrictive covenant. Both the principal and the associate should obtain independent legal advice to review the covenant for both proper wording and form.

A restrictive covenant is typically part of a principal/associate agreement and, therefore, subject to all the elements of contract law. Certain vitiating elements — such as misrepresentation, duress and undue influence — can lead to a

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voidable and/or void contract. Therefore, principal dentists should not misrepresent the associateship opportunity, and should encourage associates to seek independent advice before signing the agreement.

An independent third party valuation of the goodwill associated with the principal's patient-base would be useful to help prove that there is a legitimate interest to protect. In the case of a breach of the covenant by the associate, this goodwill valuation might also be helpful for estimating damages.

As discussed earlier, a restriction must be reasonable in the circumstances. Therefore, principal dentists should not make the restriction any more onerous than is necessary to protect his or her legitimate interests. Very wide restrictive covenants have little chance of being enforced, and the principal then runs the risk of the courts refusing to enforce any restriction on the associate.

Remedies Available To the Principal For Breach

In the event of a breach of the restrictive covenant by a former associate, the principal dentist could seek:

- **Injunctive relief:** This is an equitable order requiring the person violating the contract to cease and desist from the prohibited activity. An injunction may be the best remedy in the case of an associate's breach of a restrictive covenant, because of the extreme difficulty in assessing damages. Associates should be aware that this remedy is available to the principal, as it could prove very costly to an associate who has spent tens of thousands of dollars on leasehold improvements and/or signed a five-year premises lease.
- **Actual damages:** This is where the courts attempt to assess the dollar value of the damage suffered by a principal dentist as the result of a breach of covenant by an associate. The problem with this remedy is that it is extremely difficult to prove the actual damages.

- **Liquidated damages:** These are specified amounts of money, agreed to in advance by both parties, that must be paid by the associate to the principal on breach of the restrictive covenant. To be enforceable, liquidated damages must be compensatory only, and cannot represent a penalty or punitive sum.

Some of the remedies for breach of covenant are mutually exclusive and some are not. For instance, suing successfully for both actual damages and liquidated damages is not possible. However, suing for actual damages would not prohibit injunctive relief.

Measures To Reduce the Need For Court Action

When principal and associate dentists engage in court battles, everyone loses (except their lawyers). Both dentists waste valuable time and money, and endure significant emotional suffering. Office staff are required to work under very difficult conditions, while patients get caught in the middle, become confused, and often receive less than optimum service. The entire dental profession's image suffers any time dentists launder their dirty linen in public. Fortunately, there are some proactive steps that principal and/or associate dentists can take to reduce the likelihood of future court action:

- Prior to forming a principal/associate relationship, the dentists should spend considerable time getting to know one another both professionally and personally. Spending time in meetings and discussions allows both parties to develop realistic expectations. They should fully understand the relationship they are about to enter, which will help them to avoid considerable grief later on.
- A two- or three-month trial period, before the restrictive covenant takes effect, might be useful. Should the parties split within the first few months, the principal dentist would likely lose only a few patients (certainly not

enough to make a law suit worthwhile).

- A clause in the principal/associate agreement stipulating mutually-acceptable liquidated damages for breach of the restrictive covenant, would probably facilitate an out-of-court settlement in the event of a breach of the covenant by the associate.
- A principal/associate agreement without a restrictive covenant is another possibility. In this case, the associate would normally receive a reduced level of compensation in return for not having to sign a restrictive covenant. Basically, this would represent pre-paid liquidated damages. For example, if the usual and customary associate percentage is 40 per cent, then it might be reduced to 30 per cent in return for not having a restrictive covenant. This approach can also be used in associateships leading to a buy-in or buy-out, whereby the final purchase price of goodwill is reduced.

Summary

Principal/associate relationships are very common in dental practice today, and significant value is now associated with patient lists and practice locations. Therefore, principal dentists must take steps to protect valuable practice goodwill. The inclusion and proper use of restrictive covenants in associateship agreements should help to protect principal dentists. ■

Dr. H. Jack Stockton is an assistant professor with the department of restorative dentistry, faculty of dentistry, at the University of Manitoba. He is also the faculty's course coordinator for practice management and dental jurisprudence, and does part-time consulting with private practice dentists.

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References

1. Cappellacci, E. Restrictive covenants in agreements between dentists. *Oral Health* 81(7):15-21, 1991.
2. Hardigan, J. and Hagan, B. Current issues in the development of associations. *Clark's Clinical Dentistry*. New York: J. B. Lippincott, Volume 5, 1991, p.p. 1-14.
3. Cappellacci, E. Restrictive covenants in agreements between dentists. *Oral Health* 81(7):15-21, 1991.

Economics of The Associate

(Continued from page 241)

■ Negotiate an agreement

The associate agreement must detail the associate's compensation and benefits, define ownership of the practice's goodwill, outline a method for valuing the practice, and set up the framework and time line for the associate to buy-in.

■ Have a trial period

The trial period should be at least six months so that you can get a good idea about working with the associate. It should be no longer than one year, since goodwill gets mixed up after that period of time. If the associate is a recent dental graduate, they will need time in the trial period to increase their chair-side efficiency and management skills. Don't expect them to reach full production in the first six months.

■ Begin the buy-in

At the end of the trial period, begin the buy-in process. If either you or the associate chooses not to proceed with the buy-in, you need to make a business decision. Is it worthwhile to allow the associate to remain in the practice and potentially diminish or lose the value of your practice goodwill?

In summary, with the right conditions and proper motivation for a buy-in, associates can provide great advantages in a practice. You must take steps to protect your goodwill and investment, however. Without an eventual buy-in, most associate relationships are not sufficiently profitable to be worthwhile.

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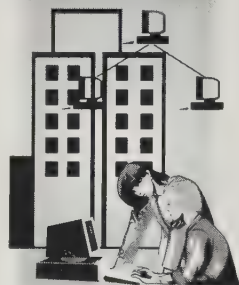


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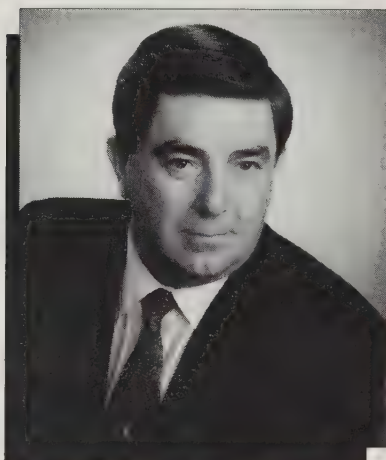
An Associateship – “The Beginning”

L.W. Halstrom, BA, DDS

Associate relationships have existed in the healing arts since time began. Apprenticeship doctors were probably the first associates. But over the course of time, the rules of associateships, as well as the attitudes of health care providers toward them, have changed. Rather than being an employee/employer-like relationship, the modern associateship is based on a dependent contractor working within the framework of the principal's business. This type of a relationship is typically governed by a negotiated associate agreement.

The one paramount feature of all associate agreements is that they are only as good as the parties to the agreement themselves. While an agreement is essential to the working arrangement, many of the common provisions of such agreements are unenforceable in practical terms. The onus is on the two parties involved to ensure compatibility at the outset. Such an assurance can only exist in an atmosphere of complete understanding, trust and full disclosure. This points to the need for complete resumés and effective interviews.

The December 1992 *Bulletin* of the College of Dental Surgeons of B.C. quotes a “recent graduate” study showing that more than two out of three new grads prefer to begin their career in an associateship (60 per cent) or a partnership arrangement (10 per cent). The driving force behind this clear shift in direction for new graduates is the current state of dental prac-



Dr. L.W. Halstrom

tice economics. In most of the “desirable locations,” otherwise known as urban centres, a cold start in private practice requires more than a stout heart. Today, patient load is king. Any dentist with a large patient load can easily expand to a larger operation, thereby increasing the efficiency of his or her practice by making better use of the physical plant and underutilized staff.

The reputation of associateships is clouded. All manner of horror stories are still floating around the dental community. Whether it is the story of a failed partnership, a frustrated shared overhead experience, or an unsatisfactory associateship, the common thread to these stories is unpreparedness. In truth, these failures are not so much a measure of the basic cussedness of dentists as they are examples of the flaws that eventually appear in any under-researched relationship. The simple fact that two people

have similar training and share a common interest in the dental profession is no guarantee of commonality of attitudes and expectations. It is, therefore, essential that a thorough investigation of each of the parties contemplating an associateship, one by the other, is undertaken.

There are three questions that must be answered – why, when, who? The most important of these is “why?” The motive behind a dentist's decision to take on an associate will govern the relationship. Consider the differences in attitude of the principal practitioner in each of the following scenarios:

“I want an Associate to...”

1. Relieve an out-of-control work load.
2. Help carry an ever-increasing overhead.
3. Build the practice toward an eventual sale.
4. Find a candidate for the purchase of the practice.

The conditions of “employment” for an associate in each of these scenarios will be different. For the associateship to be a success, both parties must know which of these avenues they intend to follow, and where they hope to end up.

The question of when is wholly dependent on the answer to why. In the case of the out-of-control overhead or work load, it is ASAP. To respond to a need involving the longer term, when will depend on the health of the practice and its

capability to provide a work load for the new practitioner.

The foundation for a successful associateship is a clear understanding of the basic reason behind such an undertaking. Once the principal practitioner has made this distinction, and realizes the need to be forthright with the prospective associate on this issue, the scene will be set.

First off, it is important to specify the term of the associateship. Whatever the term, be sure to allow for a preliminary "trial" period before any arrangements are cast in stone. Allow, say, two weeks for a walk-away by either party. This provision must be considered during the initial discussions, so that it does not become a source of alarm later, when other details that have come into the picture could be construed as a reason for concern for either party.

Many of the questions revolving around who are exactly the same for the two parties. Before advancing to any form of interview, both dentists must recognize the essential differences between an associateship relationship and an employee relationship. The initial contact should be in the form of an exchange of preliminary information. The practitioner should take the time to prepare a "fact sheet," which can then be made available to all prospective associates. This document will act as the preliminary "audit," and should include "public knowledge" about the practice and the practitioner, including:

1. Personal Profile

A personal profile of the practitioner will also be very revealing in terms of the practice itself. It should detail the practitioner's:

- ethnic and linguistic background and capability.
- hobbies and interests.
- community involvements.

2. Professional Profile

- years in practice.
- previous locations.
- academic history.
- special interests.
- testimonials of previous associates.

3. Practice Style

- hours of opening.

- holiday times.
- patient expectations.
- emergency service.

4. General Expectations

- hours.
- term of associateship.

5. A Summary of the Coworkers

- hygienists.
- assistants.
- certified assistants.

At this point, it is not necessary to outline the financial details. The intent of this early involvement is to prepare the prospective associate for the next step in the negotiations, and to discover any early conflicts. Interviewing clearly unsuitable candidates is a waste of everyone's time.

Similarly, the associate should provide a preliminary resumé. This document provides the same general information, including academic records and references. At this point, verbal communication between the prospect and the practitioner or his staff can be kept at the level of a telephone conversation. Any interview or inspection of the premises should be avoided until all of the preliminary facts have been reviewed. If a match is possible, then a preliminary interview should be conducted. This will be a "get acquainted" type of meeting to allow each dentist to get an early impression of the other party. There are a myriad of personal reasons why two people cannot work together, a large number of which are readily and immediately apparent. There is no point in wasting time and going through unnecessary disclosures in clearly unworkable situations.

If the indications are still positive at this point, more detailed information about the practice and the associateship opportunity should be made available. This should be provided only on the execution of a non-disclosure agreement to protect the confidentiality of the information. The principal practitioner needs to be specific about the terms and conditions of the contemplated arrangement, providing the associate with general statistical and financial information about the practice and any agreements that may be required. The practitioner should already have opted for

an associate agreement that details the financial compensation, non-competition requirements and all the other issues that pertain to the terms and conditions of the relationship. This would amount to a virtual offer to the associate.

At this point, the practitioner should ask for any further information to be required from the associate, for example a medical history. The practitioner must also be very clear as to why the associateship is available. Certainly, if there are implications or expectations for a long-term relationship, the associate needs much more information about the practice. Gone are the days when a handshake and a starting date were all that was required. Both parties would be well advised to seek professional guidance before signatures are set to paper.

Summary

Associateships can be successful and profitable. However, prudent business principles must be followed by both parties. The relationship of two professionals is essentially different from other employee/employer situations, particularly so if the agenda of the principle practitioner is more complex. No matter what the level of complexity of the associate agreement, the will to agree based on full and complete disclosure is much more important than the adherence to some letter of the law. Most provisions of associate agreements are difficult, if not impossible, to enforce. Both sides are then at risk. The clearest form of protection is a complete and unreserved sharing of the requirements, expectations and intent of the relationship. ■

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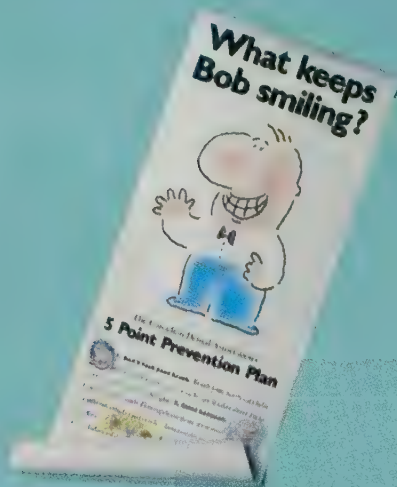
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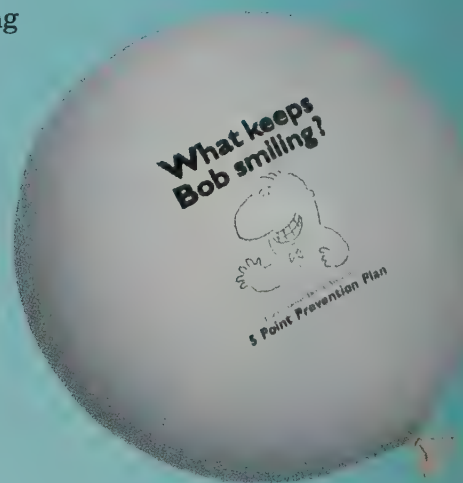
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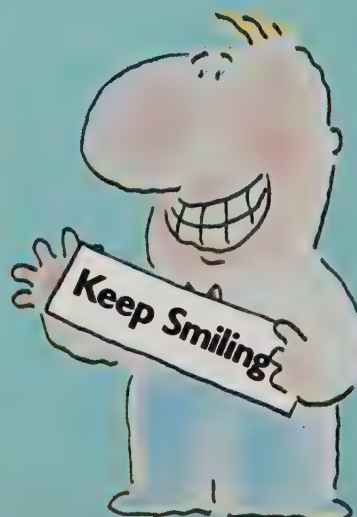
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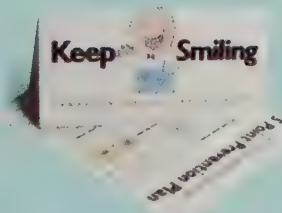
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Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements: A New Method

Thomas E. Miller, B.Sc., MA EDuc, DDS, Dip. Prost.

John A. Barrick

Maryland

Introduction

One of the many dilemmas that the clinical restorative dentist must face is treating the young adolescent patient who prematurely loses his adult teeth due to trauma.

In this case, a 12-year-old Caucasian male had avulsed his deciduous maxillary central incisors and his adult central incisors in exactly the same circumstances – tripping over the root of a tree in his own yard.

Clinical Evaluation

The patient had traumatically exarticulated² his adult maxillary central incisors. Several years earlier, he had avulsed or totally displaced³ his deciduous incisors in exactly the same manner. He was quite anxious to get his maxillary anterior teeth replaced, as he was embarrassed¹ by their absence, and was being ridiculed by friends and classmates at school (Figs. 1, 2, 3).

According to Josell and Abrams,⁴ the patient fit the classic traumatic injury category, in that he was male and had avulsed the maxillary anterior teeth as the result of an accident.

In this case, the prosthodontic,

restorative, esthetic, and orthodontic considerations and decisions to be made involved:

1. Maintaining enough space,⁵ mesio-distally, for the size of replacement pontic required, especially if the maxillary right and left sides were permitted to collapse or migrate into the midline area.

2. The patient's age, which dictated that growth and development could be anticipated in all three dimensions and, therefore, that a removable or fixed prosthetic appliance would restrict or prohibit the natural movements and positions of the teeth and bone housing these elements.

3. The possibility or probability that if the teeth were not replaced, the patient could develop an anterior tongue thrust and concomitant anterior open bite relationship. Or that a speech impediment might succeed the tooth loss, and neuromuscular or physiologic disharmony might occur in the lower half of the orofacial complex.

4. The psychological impact of the missing teeth and the resulting peer pressure could be devastating to the patient's self-esteem.

5. The lack of esthetics and decreased masticatory efficiency

could create immediate and long-term problems.

6. The lack of space between the incisal edges of the mandibular anterior teeth (Figs. 1, 2, 3), which prevents the placement of any restorative material. Polymethyl methacrylate denture base material, placed in the form of a temporary, removable partial denture, is specifically prohibited due to this lack of space.⁶

An alternative removable partial denture would have to incorporate a design that increased the vertical dimension of occlusion throughout the entire arch form of the maxillary arch. This type of device would restrict any growth and development, and might allow the mandibular arch to shift anteriorly, creating a Class III malocclusion.

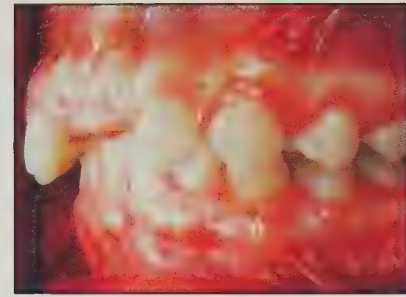
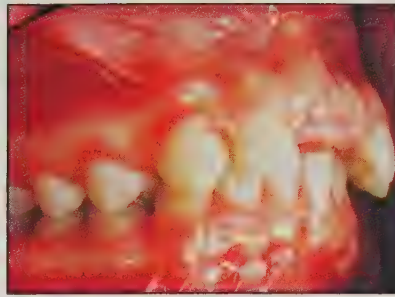
The size of the pulpal chambers in a patient of this age negated against reshaping his mandibular incisors to create space for the denture base.

7. The size of the immature pulpal tissues of the maxillary lateral incisors precluded placing a conventional fixed partial denture.

8. The immature gingival and osseous tissues, which also obviated the use of a conventional fixed partial denture, since the tissues would



Fig. 1: An intraoral view of missing maxillary central incisors. There has been some collapse toward the midline and the mandibular anterior teeth are impinging into the palatal tissues, prohibiting placement of a removable partial denture.



Figs. 2 and 3: The patient's right and left buccal views display the posterior occlusal relationship depicting the Class II malocclusal relationship of the six-year molars and canines in both arches.

retract during natural maturation and expose any hidden metal margins, making for an unesthetic fixed partial denture.

9. The incisio-gingival length of the proposed abutment teeth, which was too short to consider placing a conventional fixed partial denture.

10. The short lateral incisors and the high gingival tissues, which also contraindicated the use of the conventional and conservative⁷ bonded metal retainer, i.e., "Maryland bridge." The use of the bonded retainer from the labial^{8,9} aspect was also rejected, as retention would be inadequate.

11. The conventional, full-coverage, porcelain-veneered-to-metal fixed partial denture, fabricated for the adolescent patient, is designed to accommodate the anticipated medio-lateral growth by employing a sleeve and pin design. However, this sliding channel design is nonetheless a conventional fixed partial denture, and its placement is an irreversible procedure involving the removal of most if not all enamel and circumferential gingival irritation.

The dilemma for the young man, his parents, and the restorative dentist is quite apparent. However, by using a modification of the laminate veneer bridge (fixed partial denture), and incorporating the innovative application of a relatively new material, an indirect reinforced posterior composite fixed partial denture was fabricated for the patient in an indirect/directly bonded technique.

The new material is a woven

polyethylene strip^a that is gas plasma treated to activate the surface structures to a depth of 200 angstroms.

This woven cloth material is susceptible to surface contamination if special precautions are not followed in the handling of the fabric. The clinician is strongly advised to wear clean white cotton gloves while manipulating the cord, which must be cut with diamond-coated scissors. Once the strip of woven polyethylene is soaked in a wetting material – unfilled BIS-GMA resin – conventional instruments may be used in the follow-up treatment.

Historical Background and Materials

For years, the splinting of periodontally and traumatized teeth or the reimplantation of an avulsed tooth was accomplished by surgically wiring these teeth in place. This wiring technique evolved to the point where the wire was actually imbedded into shallow troughs prepared in the enamel and dentin in the form of an "A"-splint^{10,11} to effect a more esthetic and long-term result.

As techniques continued to evolve, the process of acid etching enamel surfaces and the bonding and/or wiring together of loose teeth with methylmethacrylates and composite resins to achieve a less invasive and irreversible method of splinting came into being. Surgical stainless steel is the material of choice for many clinicians, but fibreglass¹² and other types of "reinforcement" materials, such as Trilene,¹³ Kevlar,¹⁴ and

silk¹⁵ are embedded into composite resins. Trilene is a fishing line material, whereas Kevlar is a polyaramid commonly used in bullet-proofing vests and reportedly strengthens the splint to a level three times greater than that of steel by volume.

In addition to the splinting of loose teeth, this technique allows for the prosthodontic replacement of the avulsed or lost tooth, with the patient's natural tooth or a denture tooth acting as the pontic.^{16,17,18}

To add to the clinician's armamentarium of methods for splinting or replacing lost teeth in a conservative manner, the profession has Ribbond, a plasma-treated, leno-woven, highly-oriented, ultra-high molecular weight polyethylene that is biocompatible fibre material. Ribbond ribbons undergo a special surface-coating procedure to make them reactive to the composite resin that they will be embedded in.

This polyethylene material is reputed to be 10 times stronger than steel, and 35 per cent stronger than Kevlar. In the woven state, it retains a level of resiliency that is desirable in the oral cavity,¹⁹ considering all of the multitudinous forces that are exerted on the teeth in many different directions.

The dynamic and physical factors that constantly impact on all of our restorative endeavors, such as direction, duration, distribution, intensity, and frequency, threaten and jeopardize the anticipated success. Distance and time probably take their collective tolls on every restorative material, whether it is metallic, plastic or ceramic.

The woven nature of the Ribbond strands imparts a multidirectional reinforcement to the composite resin, as opposed to the unidirectional reinforcement found with single or multifibred reinforcing materials.

In addition, treating the superficial layer of the fabric with gas plasma creates a reactive surface for the interaction of the composite resin material to the fibre. This surface modification of the fibre enhances its wettability and reactivity to the composite.

Gas plasma treatment is limited to only several molecular layers, and amounts to less than 200 angstroms of penetration and activation, but is significant in the reactivity of the composite to the fibre support, and the intimate chemical reaction of the fibre support to the composite.

Ribbond has a modulus of elasticity of 24 million psi, a tensile strength of 431,000 psi, and an elongation percentage of 2.8.

Technique and Clinical Application

The only preparation performed on the patient's teeth was the

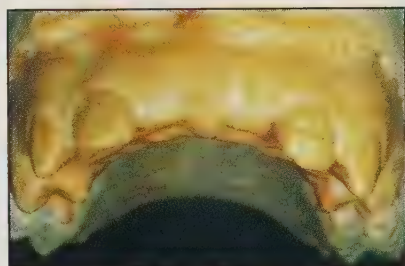


Fig. 4: The maxillary cast of the prepared vertical groove in the right lateral incisor and the horizontal groove in the left lateral incisor. The preparations are in enamel and are used for orientation of the composite bridge.

placement of a shallow groove on the labial surface of each of the lateral incisors. These grooves were confined to enamel, and therefore no anesthetic was employed.

The shallow grooves, one vertical on the right lateral incisor and one horizontal on the left lateral incisor, minimally increased the surface area of bonding, but their main function was to act as witness lines to aid in the positioning and orienting of the prosthesis at the time of direct bonding. In effect, the grooves minimized the amount of sliding and shifting during the bonding phase.

Irreversible hydrocolloid (Alginate) impressions of the maxillary and mandibular arches were secured and cast. A light lubricant of silicone grease^b was applied to the labial surfaces of the laterals and canines. The heavily-filled posterior composite^c material was applied and sculpted to the lateral incisors in a very shallow manner, as was the "bridging" of the composite from the two lateral incisors to each other.

The polyethylene woven material (Ribbond) was then laid over the supporting struts and sequentially bonded into place with incremental exposure to a visible light curing source to polymerize the build-up (Figs. 4, 5, 6, 7).

The Ribbond reinforcing material was placed as far toward the labial and gingival aspect as possible. This placement optimizes the resistance to flexing under incisor loading or during the protrusive mandibular activities of normal masticatory efforts.

Under compression, the composite nearest to the opposing dentition will work well. Ribbond

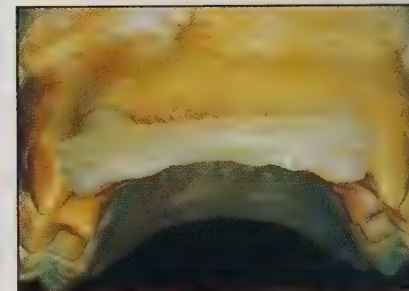
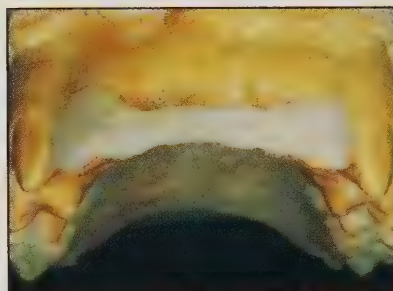
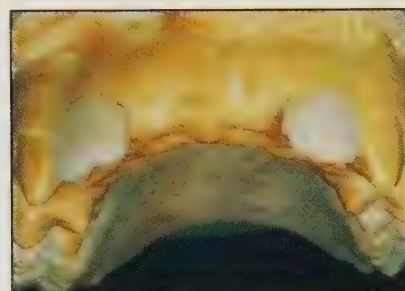
works best under tensile forces, however, and is placed as far away from the loading force as possible. This provides the rationale for positioning Ribbond labially and gingivally.

Occasionally, this positioning may create a problem with esthetics if the material being used shows through the composite build-up. However, Ribbond's white color blends instantly, chameleon-like, with the composite color being used. This is in contrast to the discolorations experienced with Kevlar, which has a pale-yellow color. Its yellowish color limits the use of Kevlar to posterior or lingual applications.

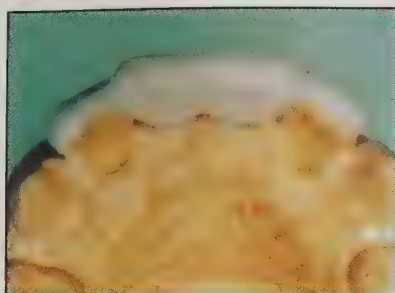
Fibreglass has disadvantages as well. Its fibres are rigid and difficult to handle, and irritation can occur if the material is exposed during the trimming and polishing procedures.

The final contours of the composite-reinforced resin prosthesis used for this patient are displayed in Figs 8 and 9. Due to his young age, the polyethylene (Ribbond)-reinforced posterior composite²⁰ bridge was characterized labially in an attempt to simulate the youth of the patient. The incisal edges of the bridge were softly colored with a dilute and pale blue colorant. The interdental connector areas were colored with a fine line of dilute brownish-grey mixture to break up the monotony of the composite bridge, and the gingival aspects were lightly colored with a dilute pink characterizing-colorant in an attempt to enhance the youthful appearance²¹ of the bridge in the patient's oral environment.

The prosthesis was removed from the working cast and the tooth-facing surface of the abut-



Figs. 5, 6, 7: The progressive addition application of the heavily-filled posterior composite to the two lateral incisors, initially as a laminate veneer (Fig. 5), then as the rolled bar of composite to "bridge" to the two lateral incisors (Fig. 6), followed by the placement of the "Ribbond" reinforcing woven polyethylene fabric (Fig. 7).



Figs. 8 & 9: Labial and inciso-lingual views of the four-unit transitional fixed partial prior to bonding clinically. The pontic design is a modified ridge-lap contour.

ment retainers cleaned with a soap-water lavage, dried, air-abraded^d and then treated with Comp-etch^e, a 9.5 per cent hydrofluoric acid gel material that selectively and superficially attacks and leaches out the inorganic filler particles of the composite resin.

The hydrofluoric acid-conditioning gel was applied for two minutes, with special care being used in handling material, i.e., rubber gloves, eye protection, and plastic apron were worn. The acid was then washed off for one minute. This treatment created a surface texture that, under high magnification, reveals a honey-combed, micro-structure of undercut retentive design, making the surface receptive to composite resin tags for bonding purposes.

Prior to bonding the bridge to the abutment teeth, the acid-conditioned abutments of the bridge are treated with silane coupling agent to ensure the maximum retention of the composite bonding agent.

After etching the composite material of each abutment retainer, the surface is treated with a silane coupling agent to optimize the adherence of the bonding composite to the bridge elements.

This composite resin retentive surface is bonded to the etched enamel of the patient's teeth, thereby creating a "zipper-like" device for retaining the prosthesis. The reinforced posterior composite bridge was systematically and meticulously bonded to the lateral incisors.

Figs. 10 and 11 show the bonded fixed prosthesis in place, and the pleasure on the face of the patient upon receiving his Ribbond reinforced composite resin fixed partial denture.

The patient and mother had been informed of the labial bulk of material and of the absolute prerequisite of plaque control, including the manipulation of dental floss under the bridge to cleanse the tissue-surface of the prosthesis. In addition, the patient and his parent were given verbal and written instructions on the oral care of the bridge, and the dietary and activities restrictions imposed by the placement of the bridge.

The patient was later appointed to the orthodontic clinic for the treatment of the malocclusion that he originally presented with. It was possible to section the bridge in the midline to accommodate the complete-mouth orthodontic therapy indicated, with the bridge being incorporated into the orthodontic appliance^{22,23,24} as an esthetic convenience for the patient and as a mechanical device for the orthodontic therapy.

Summary

This brief paper was intended to introduce to the restorative clinician an alternative method of replacing missing teeth through an adaptation of existing accepted methods. It also introduced a relatively new reinforcement material that supports composite resin and increases its strength.

This patient treatment report discussed the case of a pediatric patient who traumatically avulsed not only his deciduous teeth, but also his adult succedaneous teeth. Confronted with the pediatric patient as a growing and developing individual, and one anxious to obtain esthetic replacements, the clinician must consider a method that is simple, practical, expeditious, inexpensive, and esthetic.



Fig. 10



Figs. 10, 11: (Close-up, and full face.) The heavily-filled posterior composite resin fixed partial denture bonded to the lateral incisors. The bridge is reinforced with polyethylene woven fabric "Ribbond." Shows the esthetic replacement bonded and the abject joy on the patient's face for the replacements.

The replacement of the lost teeth was accomplished with the use of a heavily filled posterior composite resin reinforced with a woven polyethylene stranded material reputedly 10 times stronger than steel.

Recent studies by Mito and colleagues²⁵ also indicate an added benefit of the use of the composite resin fixed partial denture, in that the loading to the teeth and supporting structures is diminished compared to conventional and composite-bonded metal bridges. The esthetics of the all-composite bridge is an improvement over the "Maryland bridge," even when the fixed partial denture is bonded to the abutment teeth with opaque bonding agents.

The clinical application of the polyethylene material, Ribbond, is not confined to the uses outlined for the case discussed in this paper. The senior author-clinician has

adapted the use of this material to adults for routine and emergency needs. It has also been used for splinting periodontally-involved teeth, repairing fractured removable complete and partial prostheses, reinforcing prostheses that, in an anticipatory manner, would prevent midline fractures of complete dentures, reinforcing long-span fixed provisional splints, and other applications that are only limited by the imagination of the person using the material. ■

a) Ribbond: Seattle, Washington

b) Masque: Henry J. Bosworth Co., Chicago, Illinois

c) Marathon: Den-Mat, Santa Maria, California

d) Comp-etch: Gresco, Stafford, Texas

e) Microetcher: Danville Engineering Inc., Danville, California. Also distributed as: Sand-blaster "Ad-Abrader," J. Morita, U.S.A., Inc., Tustin, California, or Parkell Inc., Farmingdale, N.Y. or "MicroEtcher Precision Sand Blaster" Den-Mat, Santa Barbara, California.

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References

1. Cinotti, W.R., Grieder, A. and Springob, H.K. *Applied psychology in dentistry*. St. Louis, C.V. Mosby Company, 1972. p. 130.
2. Andreasen, J.O. *Traumatic injuries of the teeth*. Philadelphia, W.B. Saunders, Company, 1981, pp. 203-242.
3. Hargreaves, J.A. and Craig, J.W. *The management of traumatised anterior teeth of children*. Edinburgh, E. & S. Livingstone, 1970., p. 6, 99-106.
4. Josell, S.D. and Abrams, R.G. Managing common dental problems and emergencies. *Pediatr Clin North Amer* 38(5):1325-1342, 1991.
5. Ellis, R.G. *The classification and treatment of injuries to the teeth of children*. 4th Edit. Chicago, The Year Book Publishers, Inc., 1960., pp. 141-172.

6. *Op. Cit.*, p. 147.

7. Wood, M. Anterior etched cast-resin bonded bridges: an alternative for the adolescent patient. *Pediatric Dent* 5(3):172-176, 1983.

8. Miller, T.E. Two Unique Clinical Applications Using Acid Etched Restorations. *J Prosthet Dent* 60(1):9-11, 1988.

9. Miller, T.E. Reverse Maryland Bridges: Clinical Applications. *J Esthet Dent* 1(5):155-163, 1989.

10. Stern, I.B. Status of temporary fixed-splinting procedures in the treatment of periodontally involved teeth. *J Periodontol* 31:217-223, 1960.

11. Baumhammers, A. Cold-curing acrylic reinforced temporary wire ligation splints. *Dent Dig* 72:400, 1966.

12. Diamond, M. Resin fiberglass bonded retainer. *J Clin Orthodont* 21:182-183, 1987.

13. Friedman, H. Perio-prosthetic splinting for the geriatric patient. *Quintessence Int* 12(8):805-811, 1981.

14. Mullarky, R.H. and Ryan, D.E. Reinforcement of dental plastics with polyaramid fiber. "Trends and techniques," *Contemp Dent Lab* Jan/Feb:32-38, 1987.

15. Ibsen, R.L. Fixed prosthetics with a natural crown pontic using an adhesive composite: case history. *J South Calif State Dent Assoc* 41(2):100-102, 1973.

16. Heymann, H.O. Resin-retained bridges: The natural-tooth pontic. *Gen Dent* 31(6):479-482, 1983.

17. Heymann, H.O. Resin-retained bridges: The acrylic denture-tooth pontic. *Gen Dent* 32(2):113-117, 1984.

18. Mito, R.S., Caputo, A.A. and James, D.F. Load transfer to abutment teeth by two non-metal adhesive bridges. *Pract Periodont and Aesth Dent* 3(7):31-37, 1991.

19. Donly, K.J. Posterior composite resin: use for anterior restorations. *J Dent Child* 57(4):260-262, 1990.

20. Isler, S. Esthetic principles, concepts, and practices in pediatric and adolescent dentistry. *Dent Clin North Am* 33(2):171-181, 1989.

21. Geiger, A.M. and Gorelick, L. Bonded pontics in orthodontics. *J Clin Orthodont* 23(8):551-555, 1989.

22. Gottlieb, E.L. An aid in establishing and maintaining space of missing upper anterior teeth during orthodontic treatment. *Am J Orthodont* 52(1):27-33, 1966.

23. Weiner, S. and Binder, R.E. Esthetic management of edentulous regions during orthodontic movement. *J Acad Gen Dent* 38(1):55-57, 1990.

24. Mito, R.S., Caputo, A.A. and James, D.F. Load transfer to abutment teeth by two non-metal adhesive bridges. *Pract Periodont and Aesth Dent* 3(7):31-37, 1991.

25. Walinchus, R.E. Silk bonded replacements with porcelain veneers: A cosmetic alternative in dental treatment. *J Esthet Dent* 2(4):117-121, 1990.

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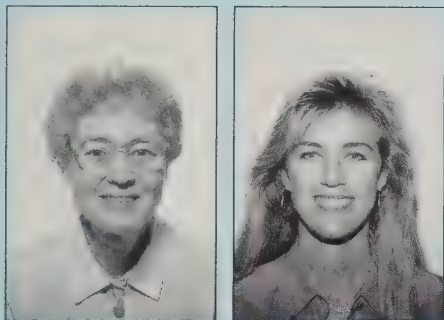
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CDA Annual Dental Meeting • Toronto 1993

April 28 - May 1

ANNUAL DENTAL MEETING UPDATE

Spouses and Children Welcome!



In the past, many spouses who wished to attend the CDA's Annual Dental Meeting indicated that they were not interested in attending the special tours and luncheons arranged for this category of delegates, but rather, would prefer to

pay a lesser fee and have access only to the general scientific sessions and the exhibit hall. To meet this request, this year's Convention Committee developed a new approach to registration for the Spouses' Program. Spouses and accompanying persons can now register to take in only the general scientific sessions and the exhibits at a reduced rate. Those who are interested in the special tours and luncheons submit additional fees to partake in these activities.

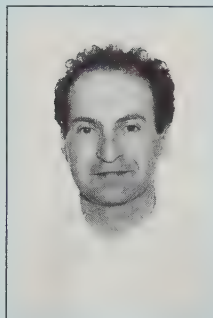
Participants in the 1993 Spouses' Program will have an opportunity to visit Toronto's Harbourfront, have lunch at the Harbour Castle Westin and the Windows Restaurant at SkyDome Hotel, participate in a walking tour of SkyDome – home of the 1992 World Series Champions – the Toronto Blue Jays, tour the famous CN Tower structure – Toronto's tallest attraction, and attend a fashion show featuring designs by Toronto designer/couturier Heather Andersen.

Registration to this year's Children's Program has also been altered slightly. Parents may now register their children for either one or two days of activities. Thursday's agenda includes a trip to the Metro Toronto Zoo, rides on the zoo's monorail and lunch at McDonald's. On Friday, the program will take participants to Toronto's Royal Ontario Museum, the museum's planetarium and includes lunch at the museum also.

Spring in Toronto is a fun time for the entire family – load the car and come on down to see for yourself!

Babs Harper & Debbie Fisher
Chairpersons, Spouses' and Children's Programs
1993 CDA Convention Committee

Run for the Fun of It!



The theme for this year's Annual Dental Meeting is 'Active Living, Active Learning' and what better way to fulfill the theme than to participate in the Annual Fun Run! The site selected for this year's Annual Fun Run will present you with a great opportunity to get out and enjoy the fresh air while taking in a spectacular view of the Toronto skyline as seen from the shore of Lake Ontario and the Martin Goodman Trail.

Young and old, fast or slow, walkers and runners, come out and join us for the 5 km and 10 km runs. Bring the whole family! A shuttle bus will depart from L'Hotel at 6:30 a.m. to bring participants to the run site. Every participant will receive a t-shirt and qualify for prizes that will be awarded at the conclusion of the run. Trophies will also be presented for various age categories. I look forward to seeing you there!

Alan Vinegar
Chairman, Fun Run
1993 Convention Committee

Let's Go Blue Jays – Let's Play Ball ...

While attending the 1993 CDA Annual Dental Meeting you may want to set aside some time to see the Blue Jays in action. We've learned that there will be no less than **three** games scheduled during the CDA Annual Dental Meeting dates – and the convention will be taking place right next to SkyDome – so register for the Convention and plan to watch the Jays too ...

Blue Jays Schedule during CDA Annual Dental Meeting



Tuesday, April 27, 7:30 p.m.
Toronto Blue Jays vs. Texas Rangers
Wednesday, April 28, 7:35 p.m.
Toronto Blue Jays vs. Kansas City Royals
Thursday, April 29, 12:35 p.m.
Toronto Blue Jays vs. Kansas City Royals

Twelve lucky pre-registrants will be awarded exclusive seats to one of the Jays games in the **Bell Canada** skybox.

Compliments of Bell Canada

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Summary of Scientific Sessions

Active Learning - Active Living

	L'Hôtel				Metro Toronto Convention Centre			
	Ballroom A	Ballroom B	Ontario Rm.	Niagara Rm.	Rm. 201 A-D	Rm. 201 E-F	Rm. 202 A-B	Rm. 202 C-D
WEDNESDAY, APRIL 28	Practice Management BURTON PRESS	Restorative Dentistry TERRY DONOVAN	Skills for Reception JEFF MILLER CHARLOTTE PEER MILLER	Implants TORSTEN JEMT (Sponsored by Nobelpharma)				
	— LIMITED ATTENDANCE COURSES							
A.M.	Endodontics STEPHEN BUCHANAN	Univ. of Western Ontario & The Cdn. Academy of Oral Medicine T. DALEY & G. MCCARTHY	Stress and Burnout CHRIS CHRISTIAN- SON (Sponsored by the ODA's Dentists at Risk Committee)	Implants Hands-on TORSTEN JEMT (Sponsored by Nobelpharma)	MINI CLINICS	Implant Maintenance / Periodontal Diagnostics SALME LAVIGNE	Anesthesia (local and electronic) STANLEY MALAMED (Sponsored by H-Wave)	GRIEVE MEMORIAL LECTURE Orthodontics EUGENE ROBERTS
THURSDAY, APRIL 29	↓	CFDE Lecture FIONA McCALL & PAUL HOWARD	↓		MINI CLINICS	↓	↓	Preventive Dentistry ERNEST NEWBRUN
P.M.								
A.M.	Practice Management ANITA JUPP	Endodontics (Lecture) DONALD YU (Sponsored by Kerr Canada)	Paediatric Dentistry PETER JUDD DOUGLAS JOHNSTON DAVID KENNY REBECCA YACOBI (Sponsored by Toronto's Hospital for Sick Children)	CDA RSP/CDIP C. GALLANT C. HARRIS J. LAMANTIA (Sponsored by CDSPI)	MINI CLINICS	Periodontal Diseases University of Toronto E. FREEMAN P. BIREK J. SODEK D. LEVY M. PHAROAH J. SYMINGTON P.A. WATSON	Infection Control MILTON SCHAEFER	Preventive Dentistry ERNEST NEWBRUN
FRIDAY, APRIL 30	↓	↓		Periodontics MARK SPATZNER (Lecture in French)	MINI CLINICS		↓	Nutrition BARBIE CASSELMAN
P.M.								
A.M.	Financial Planning THOMAS OLSON (Sponsored by Aurum Ceramic/Classic)	Periodontics RICHARD WILSON	SPOUSES' PROGRAM Street Smarts	Endodontics Hands-on DONALD YU (Sponsored by Kerr Canada) Limited to 30 participants				
SATURDAY, MAY 1	↓	↓		↓				
P.M.								

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Summary of Scientific Sessions

Active Learning - Active Living

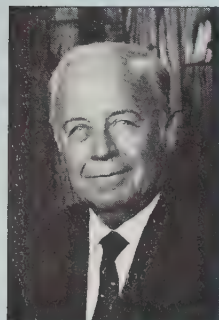
Metro Toronto Convention Centre								
	Rm. 203 A-B	Rm. 203 C-D	Rm. 205 A-B	Rm. 205 C-D	Rm. 206 A-B	Rm. 206 C-D	Rm. 206 E-F	Auditorium
WEDNESDAY, APRIL 28								
A.M.	New Technologies MARILYN MILLER & THOMAS TRUHE	Prosthodontics CLAUDE LAMARCHE (1/2 day French 1/2 day English)	Paedodontics MARVIN BERMAN	Dental Materials ALAN BOGHOSIAN	Geriatric Dentistry LINDA C. NIESSEN	Restorative Dentistry KARL LEINFELDER (Sponsored by Wright Dental)	Fluorides CHRISTOPHER CLARK (Sponsored by Procter & Gamble)	Practice Management WALTER HAILEY (Sponsored by Healthco D.D.L.)
THURSDAY, APRIL 29								
P.M.	↓	↓	↓	↓	↓	↓	↓	
A.M.	Hygiene Department Development ANNETTE LINDER	Periodontics MARK SPATZNER (Lecture in English)	Ortho-Paedodontics DAVID KENNEDY	Dental Materials JAMES SANDRIK	Geriatric Dentistry RON ETTINGER	Aesthetics ROSS NASH (Sponsored by Caulk Canada)	Periodontics JACK CATON	Wealth Accumulation TED LeVALLIANT (Sponsored by LeValliant Associates)
FRIDAY, APRIL 30								
P.M.	↓	Computers JOHN DeVRIES & NATHAN NIFCO (Sponsored by Exan)	↓	↓	↓	↓	↓	
A.M.	Team Concept LORNA AKERVALL	TMJ GILLES LAVIGNE (1/2 day French 1/2 day English)	Nutrition BARBIE CASSELMAN	Prosthodontics BRIEN LANG	MINI CLINICS	Oral Medicine STUART FISCHMAN	Orthodontics / Paedodontics JACK DALE (Sponsored by the Canadian Association of Paediatric Dentistry)	
SATURDAY, MAY 1								
P.M.	↓	↓		↓	MINI CLINICS	↓	↓	

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Highlights of the 1993 Annual Dental Meeting Program

**NEW APPROACH IN
PRACTICE MANAGEMENT**

Thurs., April 29 – All Day Session



WALTER HAILEY, JR.

The Missing Link in Dentistry

Part I – 8:30 - 11:00

Part II – 13:30 - 16:00

*Metro Toronto Convention Centre –
Auditorium*

Lecture sponsored by **Healthco DDL**

If you want to discover "The Missing Link in Dentistry" be sure to attend the session being delivered by Walter Hailey Jr. at this year's CDA Annual Dental Meeting. A presentation that is being sponsored by Healthco DDL.

Walter Hailey is a living testimony that persistence and persuasive ability will result in personal success. He took a small company and propelled it into national prominence, eventually selling it to a major American corporation for 78 million dollars!

Walter has been working with medical professionals for many years. He founded a company to provide life and health benefits to professional practices and traveled extensively working with and speaking to groups of professionals all over the country. He later founded a medical malpractice insurance company that insures thousands of dentists and doctors nation wide.

Mr. Hailey's presentation is a unique blend of people and persuasion principles that helps dentists to comfortably complete the missing link between clinical expertise and practice management. Dr. Peter Dawson said that Walter has "A message that every dentist needs to hear. I know of no other program that can match this intensive, practical and highly usable information."

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Fri., April 30 – 13:30 - 16:00



**JOHN DeVRIES
NATHAN NIFCO,
M.Sc., MBA**

Information Technology in Today's Dental Practice

Lecture sponsored by **Exan Technologies**

Ready or not, you are currently in the midst of an enormous information revolution. Many individuals and organizations are excited and enthusiastic about it, but many more are simply overwhelmed by the entire movement. Either way, there is no avoiding the fact that it is becoming a fundamental element in our economy. The key to surviving the business environment of the future is to not only understand the revolution, but to take full advantage of what it has to offer.

The purpose of this presentation is to share a perspective on future developments in information technology and how they will help dentists in their daily practice. It is an attempt to look at the dental practice from an information-technology perspective and try to determine the potential shape and form of tomorrow's dental office.

Content of the presentation will not be limited to currently available high-tech products, but will focus on the future of information technology in the dental practice. Demonstrations of futuristic technology will be given, and an emphasis will be placed on the practical application of high-tech equipment in your practice.

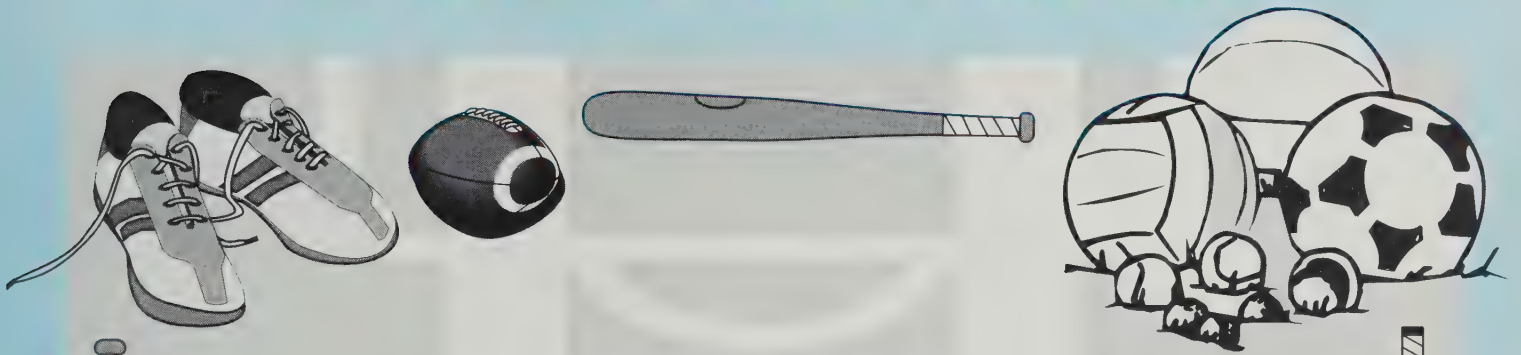
About the clinicians:

John DeVries is a diversified and successful entrepreneur who owns several companies internationally, some of which are involved in the development of technologies and information systems. Among those is Exan Technologies, widely regarded as a solid leader in the dental information systems industry.

Nathan Nifco is Director of Research and Development for Exan Technologies. His background in the software and information industry includes consulting projects for the Ministry of Commerce and Ministry of Finance and Credit Public in Mexico. His expertise was utilized in high-tech issues related to the implementation of the North American Free Trade Agreement as well as technology tools and support during the negotiations. He is currently director of the Canadian Council of the Americas, British Columbia chapter, and is author of a variety of technical studies and systems.

Active Learning - Active Living

at the CDA Annual Dental Meeting
Toronto, Ontario • April 28 - May 1, 1993

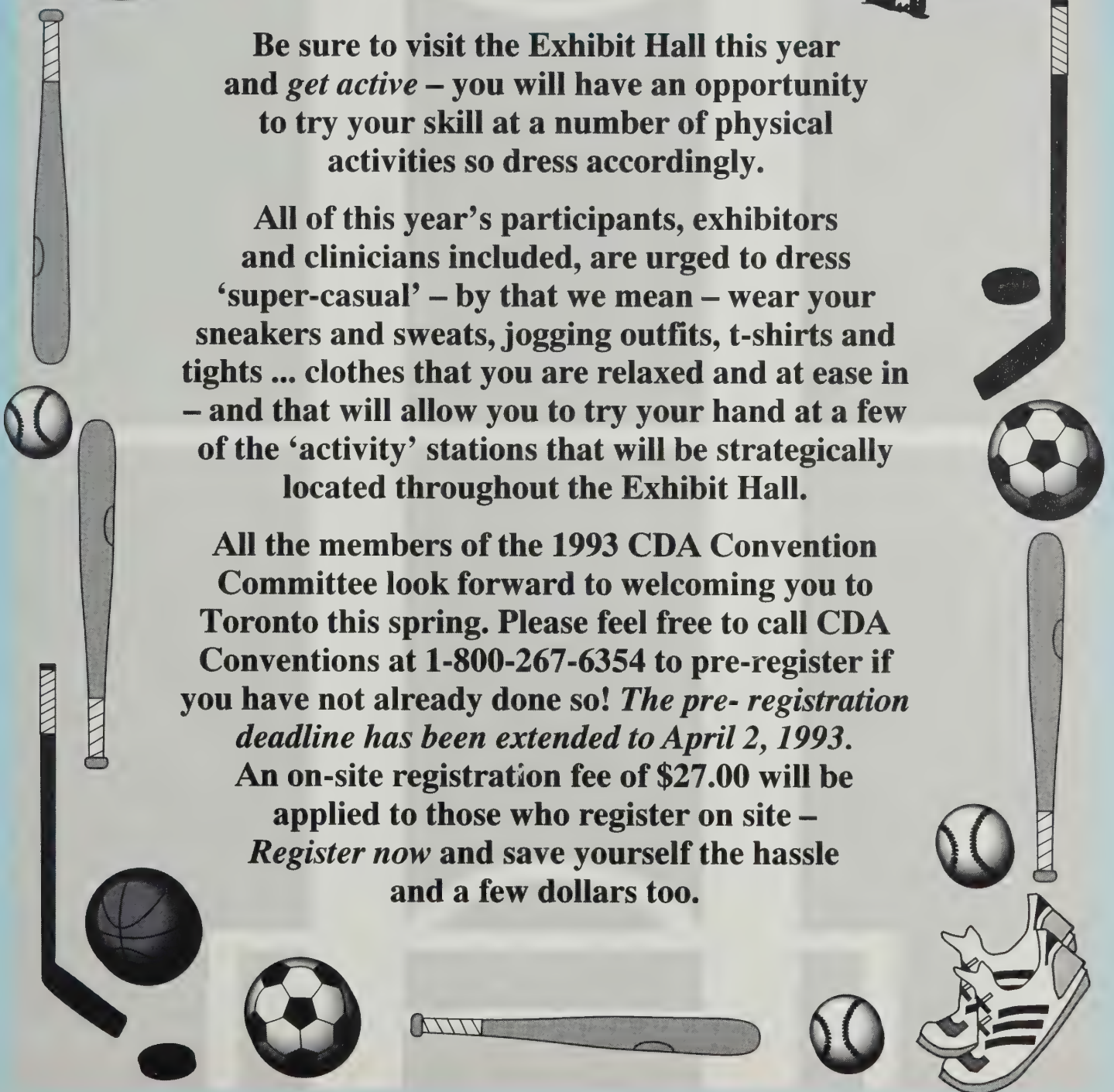


Be sure to visit the Exhibit Hall this year and *get active* – you will have an opportunity to try your skill at a number of physical activities so dress accordingly.

All of this year's participants, exhibitors and clinicians included, are urged to dress 'super-casual' – by that we mean – wear your sneakers and sweats, jogging outfits, t-shirts and tights ... clothes that you are relaxed and at ease in – and that will allow you to try your hand at a few of the 'activity' stations that will be strategically located throughout the Exhibit Hall.

All the members of the 1993 CDA Convention Committee look forward to welcoming you to Toronto this spring. Please feel free to call CDA Conventions at 1-800-267-6354 to pre-register if you have not already done so! *The pre-registration deadline has been extended to April 2, 1993.*

An on-site registration fee of \$27.00 will be applied to those who register on site – *Register now* and save yourself the hassle and a few dollars too.



CDA Annual Dental Meeting • Toronto • April 28 - May 1

Limited Attendance Courses – Wednesday, April 28th

Wed., April 28



TERRY DONOVAN, D.D.S.
Los Angeles, California
**"Update on
Aesthetic Restorative Dentistry"**

The contemporary restorative dentist has a host of options with which to help his or her patients. Many of these options are considerably less invasive than many of our conventional restorative therapies. Many patients present for aesthetic restorative treatment, and are becoming increasingly sophisticated in their expectations of the final results. Additionally, manufacturers bring a myriad of new products to the market, often accompanied by a blizzard of information purported to demonstrate the benefits and efficacy of these new products.

This presentation will delineate the procedures essential for success with conventional and contemporary adhesive restorative dentistry. An objective comparative evaluation of many of the newer products on the market will also be given, with an emphasis placed on clinical manipulation of these products.

Wed., April 28



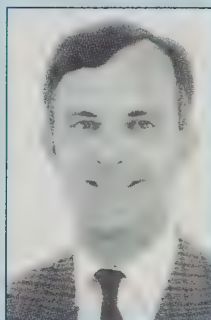
**JEFF MILLER &
CHARLOTTE
PEER MILLER**
London, Ontario

"Enhancing the Career of Dental Reception"

This course is part of the ODN & AA's Network for Career Enhancement program and was created specifically for career dental receptionists to recognize the vital role they play in the delivery of dental health care services.

Using adult education techniques, Jeff Miller and Charlotte Peer Miller will use facilitation techniques to build on prior learning. Together, the participants will share experiences, explore and develop new skills, knowledge and attitudes in their chosen vocation, dental reception. This program is designed specifically for continuing education and networking for Canada's dental receptionists.

Wed., April 28 and Thurs., April 29 (a.m. only)



Sponsored by Nobelpharma

TORSTEN JEMT, D.D.S., Ph.D.
Göteborg, Sweden
**"Recent prosthetic advances in
osseointegration ad modum
Branemark"**

HANDS-ON COURSE

For those not certified in the Branemark system, this is a certification course. This course is designed to give prosthodontists and general practitioners knowledge about the prosthetic procedures of the Branemark System.

Topics to be addressed will include:

- Introduction and review of clinical and physiological problems associated with edentulism and partial edentulism.
- Review of the scientific background of the Branemark system including biological considerations, biomechanical aspects and technical engineering aspects. Brief overview of surgical procedures and presentation of surgical aspects of significance for prosthetic rehabilitation.
- Prosthetic treatment planning, patient selection, indications and contraindications.

Wed., April 28



BURTON PRESS, D.D.S.
Alamo, California
"Secrets of Practice Success"

This presentation is a must for the entire team! Join Burt Press, dentistry's greatest motivator for a revealing look at what makes the winning practices tick. Decide today to take charge of your future – to experience the professional reward you deserve.

In today's competitive environment, the *new patient experience* is critical in gaining acceptance for total treatment. You'll learn the exact details, and why success is as simple as 1, 2, 3. Focus on a daily technique which increases gross 10% without additional patients. Critically evaluate the profitability of your approach to soft tissue management. You'll be challenged and entertained. You won't fall asleep. You may never be the same!

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Limited Attendance Courses – Saturday, May 1st

Sat., May 1



Sponsored by Kerr Canada

DONALD YU,
B.S., D.M.D., M.Sc.D.
Edmonton, Alberta

**“Predictably Successful
Endodontics in the '90s”**

HANDS-ON COURSE

On Friday, April 30th there will be a two-part lecture series to complement this Hands-on Program. The lectures will be open to all delegates registered for the convention.

The high demand by an informed public for endodontic services demonstrates that general practitioners must be abreast of proven predictably successful endodontic techniques. The rationale and therapeutic end-point of endodontic therapy in relationship with clinical cases will be clarified in social, philosophical and biological viewpoints.

This hands-on presentation will enable participants to find, feel, clean and shape the root canal system using the passive envelope of motion of the files and reamers. Participants will experience the proficiency of hermetic obturating with warm gutta-percha in conjunction with sealer into all the portals of exit of the root canal system.

Topics will include:

- Hands-on Schilder's technique on mounted extracted anterior and posterior teeth
- Review of anterior tooth
 - access opening
 - cleaning & shaping
 - packing with warm gutta-percha
- Demonstration on anterior and posterior teeth
- Cases review & critique
- Questions & Answers

The following clinicians will be assisting Dr. Yu during the full-day hands-on program: Dr. Henry Yu, Dr. Jeffrey Grossman, Dr. Zareh Onzounian, Dr. Eric Kwan and Dr. Edwin Levy.

WIN A JEEP!



You could drive home from the 1993 CDA Annual Dental Meeting in a brand-new vehicle.

Aurum Ceramic/Classic, sponsor of the CDA Annual Dental Meeting has once again graciously provided the grand prize for Exhibit Hall attendants.

Each day you visit the 1993 Exhibit Hall, your chances of winning will increase.

ANNUAL FUN RUN

Saturday, May 1st • Run starts at 7:30 a.m.

Sponsored by Healthgroup Financial



Shuttle bus from l'Hôtel departs at 6:45 a.m.

Trek the Martin Goodman Trail along the shoreline of Lake Ontario, passing by Ontario Place, on Toronto's scenic Harbourfront.

**Run for the FUN of it!
(Bring the entire family)**

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Highlights of the 1993 Annual Dental Meeting Program

Fri., April 30 – AM Session



TED LEVALLIANT
Ottawa, Ontario
**Wealth Accumulation
for Dentists**

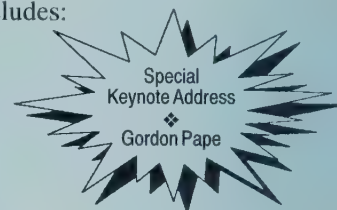
Lecture sponsored by **LeValliant Associates Inc., Arthur Andersen & Co., Healthgroup Financial, Vista Financial/Standard Life and Ash Temple**

All too often Canadian dentists fail to generate substantial wealth from their excellent revenue stream. They lack a coherent, comprehensive approach to tax and financial planning and to the long term objective of building wealth.

LeValliant Associates recognizes the challenge and has assembled a prestigious national team of experts to offer a co-ordinated approach to wealth accumulation for Canadian dentists.

The LeValliant Associates team includes:

- LeValliant Associates, Inc.
(Team co-ordinator)
- Arthur Andersen & Co. (tax)
- Healthgroup Financial
(leasing & financing)
- Vista Financial/Standard Life
(Dentl-Flex, a unique tax advantaged vehicle created for dentists, retirement plans and financial planning)
- Ash Temple (dental supplies & equipment)



At this comprehensive session, experts in these fields will join Ted LeValliant to provide information on co-ordinating an approach to wealth accumulation for Canadian dentists.

Dentists attending this session will be provided with complimentary meal passes which can be redeemed in the Exhibit Hall restaurant on Friday, April 30th.

Canadian Dental Association Symposium on Periodontal Diseases

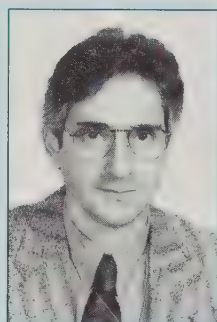
The University of Toronto has graciously offered to sponsor a full-day of lectures on Friday, April 30th.

AM SESSION

New Diagnostic Methods for Periodontal Diseases
Moderator/Discussant: **Eric Freeman**



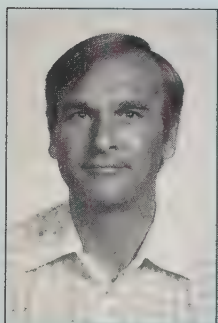
E. Freeman



P. Birek



D. Levy



J. Sodek

First Speaker: E. Freeman
Overview – New Diagnostic Methods for Periodontal Diseases

Second Speaker: P. Birek
Approaches to Measure Periodontal Destruction and to Assess Risk

Third Speaker: J. Sodek
Crevise Fluid Enzymes as Diagnostic Tools

Fourth Speaker: D. Levy
Impact of Microbiological Tests on Treatment Decisions

PM SESSION

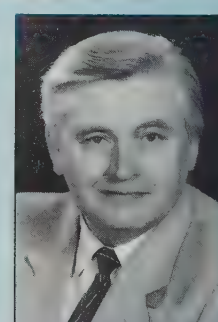
Dental Implantology – A Current View
Moderator/Discussant: **P.A. Watson**



M. Pharoah



L. Symington



P.A. Watson

First Speaker: P. Birek
Establishing an Inhouse Implant Training Program

Second Speaker: M. Pharoah, DDS, MSc, FRCD (C)
The Applications of Diagnostic Imaging to Implant Procedures

Third Speaker: L. Symington, MSc, PhD
Implants, Success and Failure

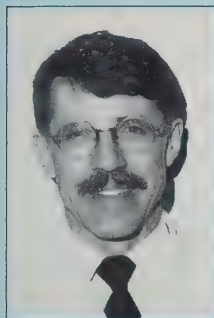
Fourth Speaker: P.A. Watson, DDS, MScD
Clinical Trials with a New Implant Design

CDA Annual Dental Meeting • Toronto • April 28 - May 1

Highlights of the 1993 Annual Dental Meeting Program

Thurs., April 29

This program is jointly sponsored by **The University of Western Ontario** and **The Canadian Academy of Oral Medicine**



TOM DALEY, DDS
London, Ontario

8:30 - 9:40 AM:

Asymptomatic Impacted Teeth – The Extraction Issue from the Standpoint of Cystic or Neoplastic Potential of the Impacted Follicle



GILLIAN M. MCCARTHY,
BDS, MSc.
London, Ontario

9:50 - 11:00 AM:

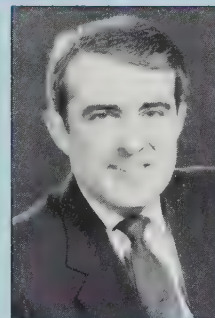
Current issues in HIV and Dentistry

Fri., April 30

Lecture sponsored by
The Hospital For Sick Children – Toronto



PETER JUDD,
DDS, MSc.
Toronto, Ontario



DOUGLAS JOHNSTON,
DDS
Toronto, Ontario



REBECCA YACOBI,
DDS, MSc.
Toronto, Ontario



DAVID KENNY,
DDS, PhD
Toronto, Ontario

AM Session: **Protocol-based Restorative and Pulp Treatment for the Primary Dentition**

PM Session: **Management of Children and their Parents in Emergent and Non-emergent Situations**

THE MURRAY McDONALD MEMORIAL LECTURE

Thursday, April 29th • 1:30 - 4 P.M.



The World is Our Challenge!

Lecture sponsored by the **Canadian Fund for Dental Education**

The World is Our Challenge

Best-selling authors Fiona McCall and Paul Howard sailed 40,000 miles around the world in a 30-foot sailboat with their two young children.

Their five-year odyssey is an incredible mix of excitement, discovery and challenge, an adventurous modern-day Swiss Family Robinson story.

But more than that, their colourful and entertaining slide presentation underscores how dedicated planning and wilful determination can make a venture work, be it world-wide voyaging or a major life goal.

CDA Annual Dental Meeting • Toronto 1993 • Mini-clinics

Thursday, April 29

8:30 - 9:30

- 201A **Electronic Dental Anaesthesia**
Mr. Chuck Hudson, 3M Canada
- 201B **The Sensory Innervation of the Teeth and the Injection Site Anatomy Associated with their Anaesthesia**
Dr. Larry Anderson
- 201C **Comfortable Retirement in 2010? Fact or Fiction for Today's Dental Community**
Mr. John Green
Ms. Gail Wiebe, Investors Group
- 201D **Impression Materials and Troubleshooting Problems**
Dr. James Hamilton
Kerr Canada

9:30 - 10:30

- 201A **Factors to Consider for a Predictable Post & Core Build-Up ... New Materials and Concepts**
Dr. Kieth Manning
- 201B **Diagnosis and Management of Endodontic Pain**
Dr. Eric Kwan
(* will run until 11:30 am)
- 201C **An Alternative Local Anaesthetic Technique**
Dr. Frank Dillon, Valudent
- 201D **Treatment of Thumbsucking in Primary & Mixed Dentition**
Dr. Jack Maltz

10:30 - 11:30

- 201A **Effectiveness in Communication**
Dr. John Bakti,
Centre for Self Development
- 201C **Tax Planning for the New Practitioner**
Mr. Mark Goodfield
Mr. Paul Girolametto,
Chartered Accountants
- 201D **Prospective Planning in Prosthodontics**
Dr. Bruce Glazer &
Gunnar Lindberg, RDT

13:30 - 15:00

- 201A **Trouble Shooting Implant Dentistry**
Dr. Izchak Barzilay

13:30 - 14:30

- 201B **Controlling Strep Mutans Infections with Chlorzoin**
Drs. J. Connelly &
J. Sandham, Healthco Canada Ltd.

13:30 - 14:30 (continued)

- 201C **Dental Volunteers for Israel**
Drs. Mel & Sharon Perlmutter
- 201D **Early Detection, Diagnosis and Management of Oral and Oropharyngeal Cancer**
Dr. Arthur Mashberg,
Germiphene

14:30 - 15:30

- 201C **Infection Control Review – The New RCDS Guidelines**
Dr. Lawrence Yanover
- 201D **The Institutionalized Senior**
Dr. Mary Kudrac

14:30 - 16:30

- 201B **Forensic Dentistry and Child Abuse**
Dr. Frank Stechey

15:00 - 16:30

- 201A **Advances in the Assessment and Control of Periodontal Diseases**
Ms. Marianne Clancy, RDH
Ms. Rebecca Van Horn, RDA,
Oral B Laboratories

15:30 - 16:30

- 201C **Selling My Practice**
Mr. Lee Maddison,
Mr. Ron MacKenzie, CA
Mr. David McPherson,
Mr. Harley Murphy
Medi-Dent Professional Services
- 201D **Fluorides and Oral Health: An Update**
Ms. Helen Grad, Pharmacist

Friday, April 30

8:30 - 9:30

- 201A **Making Patients Long Term Customers – Through Customer Service Quality**
Mr. Gordon Hanna,
Hanna Consulting Group
- 201B **The Fluoride Story**
Ms. Marianne Clancy, RDH,
Ms. Rebecca Van Horn, RDA,
Oral B Laboratories
- 201D **Surgical Considerations in Enhancing Prosthetic Maxillary Implant Esthetics**
Dr. Jack Zosky

9:30 - 10:30

- 201A **How Much is Your Practice Worth?**
Ms. Lane Brown Rourke,
Roi Corporation

9:30 - 10:30 (continued)

- 201B **Implants! The Good, The Bad, The Ugly!**
Drs. Jon Perlus & Peter Model
- 201D **Felxi-Anterior: Taking The Best from the Cast Post Technique and Improving Upon It**
Dr. Barry Lee Musikant

10:30 - 11:30

- 201A **Comprehensive Irrigation Therapy**
Ms. Cheryl Ivaniski,
Perio Powerdentics Consulting
- 201B **Preventive Maintenance Therapy – A Program for GP's**
Dr. Murray Arlin
- 201D **Dental Identification and its Application in Mass Disasters**
Drs. Ross Barlow & Stan Kogon

13:30 - 14:30

- 201A **Implant Treatment in General Practice and Porous Coated Implants**
Dr. Milan Somborac
- 201B **Vertical Extrusion: A Multi-disciplinary Approach to the Management of Crown-Root Fractures**
Major Neville Headley

13:30 - 15:00

- 201D **Contemporary Clinical Techniques for All Ceramic Restorations**
Dr. George Tysowsky,
Ivoclar North America

14:30 - 15:30

- 201A **Dental Transition – Moving In – Moving Out of Dentistry**
Mr. Tom Allen & Mr. Derek Hill,
Healthgroup Financial
- 201B **Excellence in Endodontics**
Drs. Gary Glassman &
Kenneth Serota

15:00 - 16:30

- 201D **IPS Empress: All Ceramic Crown System 2 Year Clinical & Technical Update**
Drs. Lee Culp & Gary Krueger,
Ivoclar North America

15:30 - 16:30

- 201A **Your Dental Chart is a Legal Document**
Mr. Jim Gommerman,
Safeguard Business Systems
- 201B **Dental Fluorosis – Disease or Adverse Effect?**
Dr. Jean-Guy Vallée

CDA Annual Dental Meeting • Toronto 1993 • *Mini-clinics*

Saturday, May 1

8:30 - 11:30

- 206A **Advanced Periodontal – Prosthodontics “Furcation Management”**
Drs. M. Budd & P. Novack

8:30 - 9:30

- 206B **Some New Thoughts on Functional Appliances**
Drs. Allen Feldman & Gerald Zeit

9:30 - 10:30

- 206B **Use of a Circumferential Band to Assist Periodontal Dressing Retention and Tissue Positioning on an Isolated Molar**
Major Neville Headley

10:30 - 11:30

- 206B **Advantages of Implant-Bone Facial Prostheses**
Dr. Robert Baima

13:30 - 15:00

- 206B **Implantology: An Overview**
Dr. Kenneth S. Hebel

15:00 - 16:30

- 206B **To be advised**
Dr. Kochman

CDA Annual Dental Meeting • Toronto 1993 • *Table Clinics*

Thursday, April 29 – PM

“Selective Polishing”

Ms. Denise Bard, Ms. Carmelina Buksa,
Ms. Beverley Kassirer, Ms. Linda McKay
(Dental Hygiene Students, U of T)

“Demonstration of Orthodontic and Orthopedic Appliances Used in Mandibular Advancement”

Mr. Dennis Walsh, R.D.T.,
Mrs. Alma Walsh,
My Dental Laboratory Ltd.

“Filling Portals of Exit of Root Canal System in Clinical Cases”

Dr. Alphonsus Tam, B.Sc., D.D.S.

“That Important First Appointment”

Dr. Jane Gillanders, Dr. Katherine Ing,
Dr. Roxanna MacMillan, Dr. Eileen Lo,
Dr. Michele Wang (U of T and Hospital
for Sick Children Dental Interns)

“Nature Care”

Mrs. Julie Heidebrecht, Healthco

“Role of Chlorhexidine in Clinical Dentistry”

Mrs. Jeannie Boniface, B.A.,
Germiphene Corporation

“Infection Control Chemical Management”

Ms. Dianne Doner,
Pascal International Corporation

“Environmentally Friendly Infection Control”

Mr. Dean Swift, B.Sc., B.Ed.,
Perobics Company

“Implant Supported Single Tooth Replacements”

Dr. Dan Indech, D.D.S., Dip. Perio

“Enhanced Aesthetics for Implant Dentistry”

Ms. Mirjana Salkovic, R.D.T.,
Pro-Mart Dental Lab

Friday, April 30 – AM

“Magical Stained Glass”

Dr. Morley Hardy, D.D.S.

“Handpiece Maintenance and Sterilization”

Mr. Jack Derhovagiman, Mr. Mel Gibbons,
Canadian Dental Supply Ontario Ltd.

“Accurate Reproduction of Soft Tissue Contours for Crown and Bridge Fabrication”

Mr. Lee Culp, C.D.T., Mrs. Julie Healey,
Ivoclar North America

“Controlling Strep-Mutans Infections with Chlorzoin Therapy”

Dr. John Connelly, D.D.S., Ms. Lucie
Nadeau, B.Sc., Knowell Therapeutic
Technologies, Inc.

“Long Term Stability of Cases Treated with Fixed and Removable Appliances”

Dr. G. Altuna, Dr. B. Freeman, Mr. Kevin
Davis, University of Toronto, Faculty of
Dentistry

“Diagnosis and Treatment of Dual Bites”

Dr. Bruce Freeman, D.D.S., Dr. Kathleen
Russell, University of Toronto, Faculty of
Dentistry

“Provisional Restorations for Implant Cases”

Mr. Wolf Riedel,
Nobelpharma Canada Inc.

“A Comparison of Panoramic Radiographs in Pediatric vs. Adult Patients”

Dr. Robert Majewski, D.D.S., M.S.,
Dr. James Geist, D.D.S., M.S., University
of Detroit, Mercy School of Dentistry

“Implant Angulation Correction and Aesthetics”

Mr. Steven Brook, B.Sc., M.B.A.,
Hu-Brook Health Care Products Inc.

“Oral Hygiene for the 90’s”

Dr. Michael Wiseman, D.D.S.

“Access & Efficiency in Dental Care Delivery”

Dr. James Tynan, University of Saskatchewan

Friday, April 30 – PM

“Maximization of Orthodontic Treatment Efficiency with a Minimum of Risk”

Dr. Herbert Hanson, D.D.S., Dip. Ortho

“Computer Assisted Mass Disaster Identification – The DIP-2 System”

Dr. Ross Barlow, D.D.S., Dr. Stan Kogon,
D.D.S., Ms. Liz Chin, University of
Western Ontario, Faculty of Dentistry

“White Lesions of the Oral Cavity”

Dr. Susan Sutherland, D.D.S., Dr. Marco
Fazari, D.D.S., Dr. Seema Sharma, D.D.S.,
Dr. Michelle Wong, D.D.S., Dr. Karen
Burgess, D.D.S., Sunnybrook Health
Sciences Centre

“IPS Empress Crowns”

Dr. Daniel Isakow, D.M.D.

“How to Imitate Nature in Restorative Dentistry”

Ms. Nicole Rotsaert, Mr. Henri Rotsaert,
R.D.T., Rotsaert Dental Laboratory Ltd.

“Implants – What is Passive Fit? (Spark Erosion)”

Mr. Eric Rotsaert, Mr. Kevin McAuley,
Rotsaert Dental Laboratory Ltd.

“Irrigation Therapy – How? When? Why?”

Ms. Cheryl Ivaniski, D.H.

“Methods, Procedures, and the Indications for Bleaching (Vital, Non-Vital, and Micro-Abrasion)”

Dr. Maria Digregorio, D.D.S., Dr. Kevin
Calzonetti, D.D.S., Dr. Brad Christiansen,
D.D.S., Hamilton General Hospital and
Academy of Dentistry Interns

“Osseointegrated Implant Surgery and Prosthetic Rehabilitation of Edentulous Patients”

Dr. Mark Kochman, D.D.S.

“Designing a Renovation and Expansion”

Mr. Grant Somerville,
Grant Somerville Design Inc.

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List of Exhibitors

Company Name	Booths Assigned
3M Canada Inc.	705, 707, 709, 804, 806, 808
3M Pharmaceuticals, 3M Canada Inc.	810



A-DEC, Inc.	813, 815, 912, 914
Abel Computers Ltd.	913, 915, 1012, 1014
Advance Medical Products Inc.	422
Advanced Dental Concepts ...	1624, 1626
Alpha Dental Supplies Ltd.	712
Amadent/American Medical & Dental Corp.	1215
American Dental Association	1613
APM - Sterngold	530
Arm & Hammer / Cow Brand	1621
Aseptico Inc.	1031, 1130
Ash Temple Limited	1409, 1411, 1413, 1415, 1505, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1604, 1606, 1608, 1610, 1612, 1614
Astra Pharma Inc.	1615
Aurum Ceramic / Classic Dental Labs.	919, 923, 1018, 1022
Aurum Crest Dental Laboratories ...	1020
Autopia Computer Products Inc.	631, 730



Baluke Dental Studios Inc.	1331
Bausch & Lomb Canada Inc.	510
Baxter-General Healthcare Division .	610
Bell Canada	522, 524
Belmont Takara Company Canada Ltd.	605, 607, 704, 706
Benson / Porter	1625
Beta Quartz	1024
Beyond Silicon	1033
BFI Medical Waste Systems	1623
Bisco Dental Products Canada, Inc.	1330
Block Drug Company (Canada) Ltd.	1418
Brasseler Canada Inc.	1314
Budget Dental Supplies Inc.	726
Buffalo / Bolton (BDM) Dental Mfg. Inc.	512, 514
Business and Message Center	1209, 1308
Busse Dental Supplies	619
Butler, J.O.	1218, 1220, 1222

Company Name	Booths Assigned
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C & B Dental Laboratories	618
Canada Microsurgical Ltd.	907
Canadian Associated Laboratories	325
Canadian Dental Supply	405, 407, 409, 504, 506, 508
Canadian Dental Association	918, 920, 922
Canadian Dental Service Plans Inc.	822, 824, 826
Caulk Canada / Dentsply	1119, 1121, 1123, 1125, 1127
CDA Leasing / Location ADC .	731, 830
CDAnet	831, 930
Central Dental Ltd.	812
Central Dental Laboratories (Barrie) Ltd.	809
Centrix Inc.	1324
Cerum Dental Supplies Ltd.	1026
Cerum Ortho Organizers	927
CGC Industries	1231
Challenge Dental Products Inc.	433
Clinical Research Dental Supplies	519, 521
Club Dental Labs	423
Colgate Hoyt / Gel-Kam / Viadent	1027
Colgate-Palmolive Canada, Inc.	1023, 1025
Coltene / Whaledent	314
Colwell Systems	321
Confectionery Manufacturers Assn. of Canada	625
Confi-Dent Inc.	622
Consolidated Dental	1432
Cottrell, Ltd.	527
Credident Inc.	1210



Dansereau Health Products Inc.	1131
Danville Engineering	911
DDS Dental (M & S) Supply Inc. ...	531
De Luca Dental Laboratories	509
Degussa Canada Ltd.	419, 421
Den-Mat Corporation	1618
Den-tal-ez, Inc.	315, 412, 414
Dennis R. Black & Assoc.	435
Dent-Art	621
Dental Plus	1224
Dentrix Dental Software	1230
Dentsply Canada Ltd.	1118, 1120, 1122, 1124

Company Name	Booths Assigned
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Dentsply / Implant Division	1126
Designs for Vision, Inc.	410
Direct Dental Funding Ltd.	1423
DMS Dental Management System	1525
Domtrak Systems Ltd.	1004, 1006
Dr. Toy Inc.	1325
Dunn, Peter B Enterprises Ltd.	724



E & D Dental Products	427
EFOS Inc.	215
Ellman International Mfg. Inc.	319
Encyclopaedia Britannica, North America	313
Essential Dental Systems	511
Exan Consolidated Transactions Inc.	1211, 1310



GC America Inc.	515
Gendex Corporation / Rinn Corp. / Greene Dental ...	207, 209
Germiphene Corporation	1518, 1520, 1522



H-Wave Canada	727
Head-to-Toe Health Care Attire	1223
Healthcare Communications Inc.	722
Healthco (Canada) Inc.	1005, 1007, 1009, 1011, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1204, 1206, 1208
Healthgroup Financial, Div. Conf. Leasing	615, 714
Higa Manufacturing Ltd.	1332
Hoechst-Roussel Canada Inc.	420, 1112
Horner, Frank W. Inc.	305, 307, 309
Hot Towel Company	1030
Hu-Friedy Manufacturing Company, Inc.	304, 306
Hygenic Canada	513



Implant Innovations Canada	1321
IMTC Systems Distribution Inc.	308
Ivoclar North America Inc.	612, 614

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List of Exhibitors

Company Name Booths Assigned



Jelenko, J.F., & Co. 908
Johnson & Johnson Medical
Products 331



K-Dental Repair Inc. 1225
Kerr Canada 1212, 1214
Kilgore International, Inc. 910
Kodak Canada Inc. 1519, 1521



L & R Manufacturing Company 627
Lac-Mac Limited 630
Lares Research 723
Le-Han Canada Inc. 424
LeValliant and Associates 1611
Lindberg & Homburger Ltd. 1605
Logic Tech Inc. 1327, 1426
Luxar Lasers 1032



Matrx Medical Inc. 1333
Maxill Inc. 624
Maxim Computer Systems 708
McBee Systems of Canada Inc. 620
MCC - Dental Cabinet
Systems 505, 507,
..... 604, 606
McNeil Consumer Products
Company 1420
MDT Corporation 1113, 1115
Medi-Dent Services Inc. 1015, 1114
Medical Mart Supplies Ltd. 311
Medigas Inc. 1318
Miles Dental 413, 415
Miltex Instrument Company,
Inc. 1627
Mo-Dent Ltd. 1421



New Image Industries 1531, 1630
Nobelpharma Canada Inc. 718, 720
Nobilium Canada Inc. 613
North Group (The) ... 211, 213, 310, 312
NP Group 710

Company Name Booths Assigned



Ontario Dental
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Pfizer Canada Inc. 931, 933
Posen & Furie Dental Laboratory ... 611
Pow, E.J. Laboratories Inc. 1319
Premier / ESPE-Premier
Canada Inc. 404, 406, 408
Pro-Art Dental Laboratory Ltd. 715
Pro-Dentec Canada 1233
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R.T.G. Enterprises Ltd. 1527
Richmond Dental Co. 609
Roi Corporation 905
Rugby Dental Manufacturing 322
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Safecare 425
Safeguard Business Systems 1326
Safeskin Corporation 526
Sanofi Winthrop 1013
Saunders, W.B. Co. Canada Ltd. 223
Schein, Henry Inc. 1430
Sci-Can A Div. of Lux
& Zwingerberger ... 805, 807, 904, 906
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Ultradex Limited 1607, 1609
Uni-Dent Dental Labs. Ltd. 1523
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Uniform World 1021
Upjohn Consumer Products
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Valudent Inc. 1631
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Toronto 1993 • April 28 – May 1

Preliminary Agenda • 1993 Spouses' Program

Thursday, April 29th

- Visit to the Royal Ontario Museum (ROM)
- Visit to Toronto's Harbourfront
- Lunch at the Harbour Castle Westin
- Luncheon Speaker – featuring Robin Armstrong, a local astrologer
- DIAC Tour of the 1993 Convention Exhibit Hall (Goody Bag courtesy of DIAC)
- Opening Ceremony

Friday, April 30th

- Walking tour of the SkyDome
- Lunch at the Windows Restaurant – SkyDome Hotel
- Fashion Show by Toronto designer/couturier Heather Andersen

Friday, April 30th (continued)

- Tour of the CN Tower

Saturday, May 1st

- "Street Smarts"
Lecture to be presented by the Metro Toronto Police – open to all delegates

Delegates may register for either one or both days. Registration to the convention, as a spouse or accompanying person is \$50.00. This provides the registrant with access to the Scientific Sessions on Thursday, Friday and Saturday and the Exhibit Hall. To participate in the tours and luncheons you must register for the Thursday package and/or the Friday package at a cost of \$60.00 for each day.

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Lunch at McDonald's

Friday, April 30th

A full-day visit to the Royal Ontario Museum including a tour of the museum and the planetarium.

Lunch at the Museum.

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1. Contest is open to all registrants of the CDA Annual Dental Meeting.
2. Maximum of three photographs per person.
3. Only UNFRAMED colour or black and white, no larger than 16" x 20" will be accepted.
4. Categories for the contest are:

PEOPLE	NATURE	ACTION
A: Kids	A: Its Beauty	A: Sports
B: Aging	B: Its Preservation	B: Motion
5. All decisions made by the Judge are final. Prizes will be awarded at the discretion of the Judge and the Photography Committee. Major prizes will be awarded for each category, plus best overall shot.
6. Entries should be mailed or brought in person to Dr. Warren Hing, Ontario Dental Association, 4 New St., Toronto, by April 19, 1993. Please include full name and address on the back of each entry.
7. Winners will be announced during the Annual Meeting. Registration will be verified before prizes are awarded.
8. Photographs may be retrieved by the contestants after 1:00 p.m. on May 1, 1993.

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CDA Annual Dental Meeting – Toronto 1993

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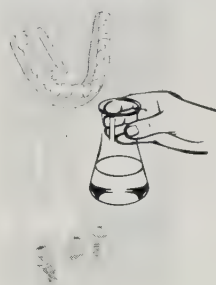
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FEATURE



Appropriate Use Of Fluorides In the 1990s

D. Christopher Clark, BS, DDS, MPH, ABDPH

Introduction

In April 1992, a workshop was held to review and revise, where necessary, the existing recommendations for the use of fluorides in Canada. The primary goal was to develop revised recommendations to keep public exposure to fluoride at the lowest possible level, while maintaining optimal benefits for the control of dental caries.

Workshop participants recognized that the concentrations of fluoride used in dental materials may no longer be appropriate today, when most Canadians are exposed to fluoride from more than one source. Similarly, current dosage regimens, which were established when fluoridation was first introduced, may also be out of date.

It was recognized that as these and other considerations change in the future, further revisions of the fluoride recommendations might be necessary. Workshop participants were also aware that their own recommendations, if accepted, might change the existing guidelines concerning the use of fluorides.

Fluoride guidelines exist to provide dental professionals with direction in the use of certain materials, techniques and agents under normal circumstances. However, some situations fall outside the context of the normal circumstances. In these situations, practitioners are encouraged to use their best clinical judgment in providing preventive care to their patients.

As a backdrop to the April workshop, experts from Canada and the United States were asked to review selected topics on fluorides.¹⁻⁷ Workshop participants accepted the findings of a number of major reviews on the risks of fluorides, which once again demonstrated the lack of any significant safety concerns regarding their appropriate use.^{8,9} The conclusions of Lewis and Banting were also reconfirmed by the workshop participants, who stated that: "Water fluoridation continues to have unique advantages from the perspectives of distribution, equity, compliance and cost-effectiveness over other fluoride technologies. Therefore, it would be a retrograde step to consider abandoning or de-emphasizing water fluoridation without first eliminating most other sources of fluoride, many of which are used or consumed on an elective basis."⁵

Much of the review and subsequent discussion revolved around five general scientific questions: how do fluorides work; is the prevalence of dental fluorosis increasing; does a particular fluoride therapy put children at risk to dental fluorosis; how much fluoride are children ingesting; and how effective is the particular therapy?

How do Fluorides Prevent Dental Caries?

The traditional thinking about the way fluorides prevent dental caries has changed.¹⁰⁻¹² Historically, fluorides were thought to work primarily by increasing the resistance of the tooth to acid

demineralization. This was brought about by the incorporation of fluoride into the outer surface of enamel, thereby making the tooth less resistant to acid dissolution.¹³ In addition, the inhibition of bacterial enzymes was thought to play an important role.

Because it was believed that fluorides needed to be incorporated into the tooth surface for their full benefits to be realized, they were most ideally ingested pre-eruptively or systemically. For these same reasons, early topical fluoride systems attempted to incorporate fluoride into the outer surface of the enamel. While post-eruptive fluorides were considered beneficial, the primary goal was to get fluoride into the tooth as fluoroapatite.

Recent studies have demonstrated that the role of fluorides in the prevention of dental caries is predominately through remineralization, which is primarily a post-eruptive phenomenon.^{11,12} Thylstrup suggests that the most important time for exposure to fluorides is from tooth emergence to the establishment of interproximal contact and full occlusion. Research findings have also demonstrated the similarity between systemic and long-term topical administrations, pointing to the greater significance of the post-eruptive effects.¹² Groeneveld and coworkers found that the number of incipient lesions occurring in fluoridated and non-fluoridated areas was similar. After several years, however, fewer of these incipient caries developed into full-cavitated lesions in the



fluoridated communities.¹¹ These findings show that the primary effect from fluorides is post-eruptive, not pre-eruptive, and more therapeutic than preventive. This suggests that current practises with regard to the use of fluoride supplements need to be changed.

The Prevalence and Causes of Dental Fluorosis

The literature suggests that the prevalence of dental fluorosis has increased in recent years. In most areas of Canada, the prevalence of dental fluorosis probably ranges somewhere between 35 to 60 per cent in fluoridated communities and 20 to 45 per cent in non-fluoridated areas. The prevalence of this condition depends on the area's proximity to water fluoridation, the extent of the water fluoridation systems in individual communities, and how consistently the recommended concentration of fluoride in these water systems is maintained (Tables I and II).¹

While this increase has been observed primarily in the mild and very mild forms of dental fluorosis, there is also some evidence of an increased prevalence of the moderate and severe forms.¹ Furthermore, associations have been found between this increase and use of fluoridated dentifrices, fluoride supplements, fluoridated infant formula, and living in fluoridated areas.^{2,3,5,7} Although none of the indices that measure dental fluorosis were intended to assess cosmetics, there is some evidence that dental fluorosis in its mild and very mild forms poses no esthetic problems.¹⁴ Dental fluorosis has not been shown to pose any other health risks beyond this possible esthetic concern.⁹

How Much Fluoride are Children Ingesting?

Studies on fluoride intake show that the three major sources of ingested fluoride are: fluoridated water, drinks and juices, and dentifrices. The ingestion of fluoride in water requires exposure to a fluoridated water supply. This may result from consuming fluoridated tap water and/or cooking with it, or from consuming liquids that con-

TABLE I

Results of studies reporting on the prevalence of dental fluorosis scores from non-fluoridated areas

Study Group	Exam Year	Age	Fluoride Intake Period	Per Cent distribution of scores			
				None	Very mild/mild	Mod/severe	Total*
Segreto et al.	1980	7-18	1962-79	74.6	25.4		25.4
Driscoll et al.	1980	8-16	1964-78	94.1	5.9	0.0	5.9
Leverett	1981	7-17	1964-80	95.6			4.4
Ismail et al.	1987	Public	1970-82	68.9			31.1
		Private		69.9			30.1
Hargreaves et al.	1987	6-13	1974-87	85			15
Pendrys et al.	1988	11-14	1974-83	74.8			25.2
Woolfolk et al.	1987	9-13	1974-84	77.7	21.4		21.4
Szpunar & Burt	1986	6-12	1974-86	87.8	12.2	0.0	15.0
Ismail et al.	1991	10-12	1979-87	41.5			41.5
Clark et al.	1991	6-14	1977-91	45.0	53.0	1.0	55.0

*Per cent of tooth surfaces affected
Adapted from Clark¹

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**TABLE II**

Results of studies reporting on the prevalence of dental fluorosis from optimally fluoridated areas

Study Group	Exam Year	Age	Fluoride Intake Period	Per Cent distribution of scores			
				None	Very mild/mild	Mod/severe	Total*
Segreto et al.	1984	7-18	1962-78	39.6	60.1	0.3	60.4
Driscoll et al.	1980	8-16	1964-78	84.5	15.5	0.0	15.5
Leverett	1981	7-17	1964-80	73.1			26.9
Heifetz et al.*	1980	8-10	1970-78	81.1	8.7	0.1	18.8
		13-15	1965-73	88.6	11.4	0.0	11.4
		8-10	1975-83	72.0	28.0	0.1	28.1
		13-15	1970-78	70.7	29.3	0.0	29.3
Szpunar & Burt	1986	6-12	1974-84	51.0	49.0	0.0	48.4
Williams & Zwemer	1988	12-14	1974-82	19.1	66.9	14.0	80.9
Ismail et al.	1991	10-12	1979-87	31.8			69.2
Clark et al.	1991	6-14	1977-91	35.0	63.0	2.0	65.0

*Per cent of tooth surfaces affected
Adapted from Clark.¹

tain fluoridated water, i.e., soups and/or "other types of drinks." Armstrong and coworkers showed that children under the age of three consumed 0.61 litres of water per day, on average. The lower 10 per cent and upper 90 per cent consumed 0.14 and 0.87 litres, respectively. For children between three and five years of age, the intake of fluoride was reported to be 0.87 litres per day, with upper and lower percentiles of 1.50 and 0.37 litres, respectively.¹⁵ If these liquids were fluoridated at one part-per-million (ppm), then the mean daily intake of fluoride from tap water and tap-water-based beverages would range from about 0.14 to 0.87 mg for three year olds, and 0.37 to 1.5 mg for children three to five years of age. In non-fluoridated areas, fluoride intake from tap water sources alone would be negligible.

A recent study¹⁶ found that the average dietary fluoride intake for six-year-old children was 0.86 mg/day in non-fluoridated areas, which is considered nearly optimal.¹⁷ Beverages and drinking water contributed to 75 per cent of this total. In both fluoridated and non-fluoridated areas, however, the ingestion of fluoride will vary

depending on the concentrations of fluoride in the products consumed. This, as Levy points out, is not only variable within the same product over time, but often goes unreported.² Another study found that the mean daily fluoride intake from beverages alone in children from two to three, four to six, and seven to 10 years of age was 0.36, 0.54, and 0.60 mg, respectively.¹⁸ An average five-year-old Canadian boy, weighing 19 kilograms, ingests 0.028 mg of fluoride per kilogram of body weight from beverages alone.¹⁹ These findings suggest that the use of fluoridated water in the processing of soft drinks and juices is largely responsible for the "halo" effect that in-

creases fluoride ingestion in individuals living in the vicinity of communities with water fluoridation. Levy also noted the wide variation in the pattern of soft drink consumption, and the marked variation in the concentration of fluoride found in different products.

While the amount of fluoride ingested from beverages is, on average, less than optimal, additional sources of fluoride from water, foods and other fluoridated products such as fluoride toothpastes could increase the amount of ingested fluoride to above optimal levels.²

Studies investigating the ingestion of fluoride from dentifrices show that the intake from this source is significant for children under six years of age (Table III). Depending on the frequency of brushing, the mean fluoride ingestion for a child under the age of three could range from about 0.18 to 0.33 mg per brushing.^{2,7} Recognizing that a three-year-old may brush twice a day, the mean intake per child from dentifrice alone could meet the optimal daily requirement.² For children between the ages of three and six, the mean daily ingestion of fluoride from dentifrice could range from 0.12 to 0.39 mg per brushing. Again, given that brushing could occur twice daily, this level of intake could account for almost all of the optimal daily requirement.^{2,7}

Data on the range of ingestion are more of a concern. In fact, Levy's review suggests that a significant number of children exceed their optimal daily fluoride requirement simply by using fluoride dentifrice.²

TABLE III

Dentifrice Usage and Ingestion by Young Children (per toothbrushing)

Age of Child	Dentifrice Used (g)*	Dentifrice Ingested (%)	Fluoride Intake (mg)
2	0.62	65	0.33
3	0.50	36	0.18
4	0.45	49	0.22
3-6	1.38	28	0.39
6-7	0.44	27	0.12
7	0.50	34	0.16

Adapted from Levy²

TABLE IV**Revised Fluoride Supplement Regimen**

Age of Child	Fluoride in Water Supply < 0.3 ppm F
3, 4, & 5	0.25 mg* F/day
6+ years	1.0 mg F/day
*If there is not regular use of fluoridated toothpaste, then 0.5 mg is recommended	

How Effective is Each Technology in the Prevention of Dental Caries?

Effectiveness is defined as the extent to which a specific intervention, when deployed in the field, does what it is intended to do for a defined population. Efficacy is defined as the extent to which an intervention produces a beneficial result under ideal conditions.²⁰ It is the effectiveness of fluoride technologies that is of most interest to dental practitioners. For example, while the workshop acknowledged that fluoride supplements are efficacious, the practise is not considered to be particularly effective because of severe problems with compliance.³

Fluoride Supplements

The most significant change that resulted from the workshop concerned fluoride supplementation. Traditionally, fluoride supplements were recommended for all children exposed to less than optimally fluoridated water. But workshop participants reached consensus on a recommendation stating that: "The use of chewable fluoride supplements may be appropriate for targeted individuals and groups of children three years of age and older in areas with less than 0.3 ppm fluoride in the water" (Table IV).

For children three to six years of age, the recommended daily dose of fluoride in supplements is 0.25 mg, providing fluoridated toothpaste is used on a regular basis. If this is not the case, the daily recommended dose of supplemented fluoride is 0.5 mg. Children six years of age and older should be supplemented by 1.0 mg of fluoride per day.

Essentially, these changes mean that most of the children who would normally be prescribed supplements, or are currently using

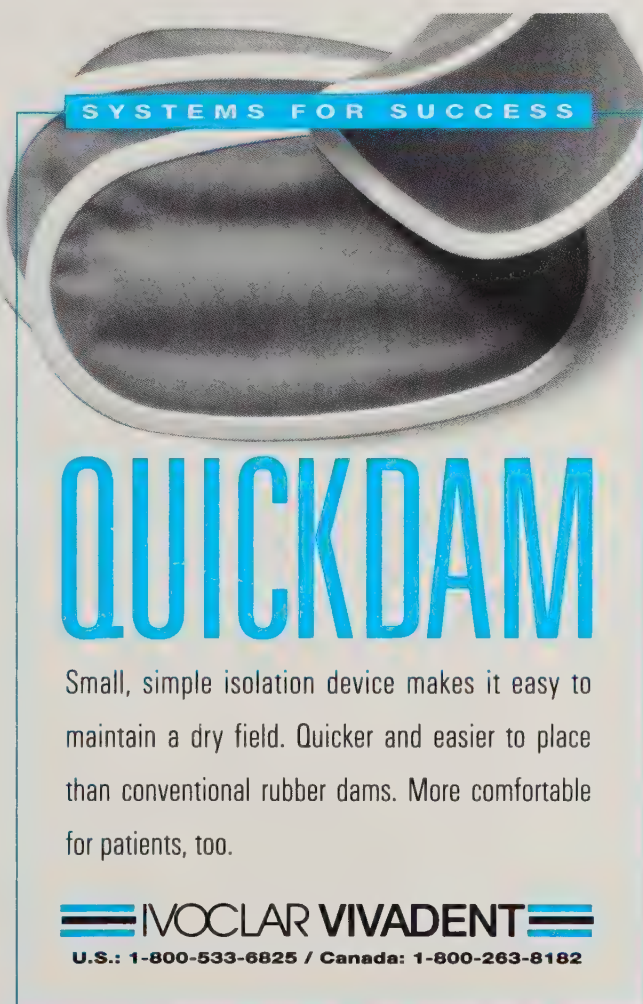
them, should be instructed not to take them. This creates the difficult situation of taking children under three years of age off of supplements, as well as older children not considered to be at risk for dental caries. Faced with this difficult scenario, practitioners need a clear understanding of why this change is needed, and of how to answer patients' questions.

To address these considerations, practitioners need to focus on how supplements work, whether they put children at risk for dental fluorosis, and their effectiveness. First, since the preventive effect from fluorides is primarily post-eruptive, starting children on supplements at age three will still afford

significant preventive effects.

In a recent study, the average 12-year-old adolescent in a non-fluoridated area had about six decayed and/or filled tooth surfaces.²¹ The efficacy of a fluoride supplement regimen, given good compliance with supplements from birth, might reduce this child's caries experience to about three decayed and/or filled tooth surfaces. If supplements were used from three years of age, the child's caries experience might be reduced to about four tooth surfaces.

Patient compliance has a significant impact on the overall effectiveness of fluoride supplements. In his recent review, Ismail noted that the "use of fluoride supplements by young children is idiosyncratic, and all of the studies which investigated the effectiveness of this regimen suffered from a significant drop in the number of participants receiving daily supplements." He further noted that "the scientific evidence supports the efficacy of fluoride supplements, but there is



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weaker support for their effectiveness in caries prevention.⁴³ Both of these conclusions are supported by recent Canadian findings.²¹

It seems logical to assume that parents who continue to administer fluoride supplements to their children, as recommended by their dentist, are a unique group. As such, they may not truly represent those families where fluoride supplements are needed, namely low socioeconomic households in non-fluoridated areas. Furthermore, the compliant parents are also most likely to comply with daily brushing routines for their children. It is exactly this type of child and parent that was of concern to workshop participants.

The question on the minds of the workshop participants was this: Will the small group of children who receive fluoride supplements before three years of age benefit from these supplements, and are they at risk for dental fluorosis? The available data suggests that these children will benefit very little,³ and may be at greater risk.

Ismail suggested that the prevalence and severity of dental fluorosis is affected by all fluoride ingestions during the period of calcification of the teeth. In his review, he states that: "Overall, fluoride supplements contribute little to total fluoride intake because of the small number of children using these products." He goes on to say, however, that the use of fluoride supplements in combination with fluoridated dentifrices and infant formula is associated with the occurrence of dental fluorosis.³ These two statements suggest that while few parents actually administer fluoride supplements to their children on a long-term basis, the children of parents who do comply will probably have dental fluorosis. Data from numerous studies support this conclusion.²²⁻²⁷

The question then remains: If a child needs the protection offered by fluoride supplements, can the risk of dental fluorosis be reduced? The work of Evans and Stamm suggests that the developing maxillary anterior teeth are most susceptible to dental fluorosis between the ages of 18 and 26 months.²⁸ Therefore, if

supplements are given at age three, the full benefits of the post-eruptive effect will be realized and the child will not develop dental fluorosis on their maxillary anterior teeth.

The likelihood that parents who administer fluoride supplements will also brush their children's teeth, and coincidentally contribute to the additional intake of fluoride, provides further support for eliminating fluoride supplements before three years of age (Table III). But why replace a technology that provides a consistent and well-controlled dose with one that fails to control fluoride intake to the same extent, i.e. fluoride dentifrice? Quite simply, while most children regularly brush with a fluoride toothpaste, their record of complying with supplement regimens is somewhat poor.

In terms of providing the most effective means of prevention, we want to prevent disease for the largest number of children possible. If we continue to recommend supplements to children under three years of age, we are putting those children who not only comply but also use fluoride toothpaste at significant risk for dental fluorosis. Most parents should be encouraged to brush their children's teeth with a fluoride dentifrice, without administering any additional fluoride supplements. Brushing alone will prevent dental caries for most children.

In summary, it was acknowledged by workshop participants that ending the use of fluoride supplements would probably have the following consequences:

- 1) a reduction in the prevalence of dental fluorosis within all classifications;
- 2) a possible, albeit very small, increase in caries experience for a small segment of school-aged children.

The results of a similar European meeting were published one month after the Canadian workshop. Without any prior knowledge of the European conclusions, the Canadian group revised the recommendations on the use of supplements in almost an identical way, i.e. supplements to be started at three years of age for high risk individuals only.²⁹

At the Canadian workshop, considerable discussion focused on our ability to control fluoride ingestion relative to all sources. In effect, this was just one step in an ongoing process of reevaluation. Recently, a panel of experts was engaged by Health and Welfare, Canada, to study the question of fluoride ingestion. The goal is to develop recommendations on the total daily intake of inorganic fluoride needed to maximize the benefits of fluoride while minimizing the risk of dental fluorosis. All fluoride sources will be considered in this review process. Therefore, it seems likely that further recommendations on fluorides will be forthcoming in the future.

Fluoride Dentifrices

Investigations that tested the effectiveness of reducing the concentration of fluoride in dentifrice have generally shown a dose response. In other words, the caries preventive effect seems to be diminished in toothpastes containing reduced concentrations of fluoride.^{30,31} However, a recent study testing the effectiveness of a low-concentration fluoride dentifrice for young children did not find any difference between the regular- and low-strength systems.³² In the future, a low-concentration fluoride dentifrice may be recommended for children under the age of six.

During the workshop, it was acknowledged that the widespread use of fluoride dentifrices has had a significant influence in caries decline. It is also acknowledged that the preventive effects of these dentifrice systems are in addition to those obtained from consuming fluoridated water.⁷

In numerous clinical trials, fluoride dentifrices have been shown to prevent dental caries.⁷ Equally important, virtually all of the dentifrice sold in Canada contains fluoride.⁷ However, while recognizing the benefits of regular brushing with fluoride dentifrices, workshop participants made it clear that these systems have played a significant role in increasing the rates of dental fluorosis.^{2,3,7}

In recognition of the potential risk for dental fluorosis to result

from the use of fluoride dentifrices, guidelines were proposed for children under six years of age who use fluoridated toothpaste:

- a) brushing with a fluoride dentifrice should normally occur twice a day
- b) brushing should be supervised by an adult
- c) a pea-sized amount of toothpaste (or a single ribbon/strip of dentifrice, not to exceed half the length of the head of a child-sized toothbrush) should be dispensed, preferably by the supervising adult
- d) swallowing should be discouraged (after brushing, spit out, rinse with water, and spit out the rinse).

Participants at the workshop agreed that these recommendations alone may not remedy the problem of excessive fluoride intake from fluoridated dentifrices. Therefore, the introduction of low-concentration dentifrice systems may someday become a reality.

Professionally Applied Topical Fluorides

Workshop participants endorsed the "selective use" of professionally-applied topical fluorides (gels, solutions and varnishes). The term selective use implies that the decision to use topical fluorides should be based on the dentist's assessment of the caries risk of his or her patients on an individual basis. Current scientific evidence suggests that individuals with a low incidence of caries would be considered low risk. Therefore, professionally-applied topical fluorides would provide little or no additional benefits.⁴

Difficulty arises when attempting to define high risk. Practically speaking, a simple definition for high risk might be any patient with active caries. From a scientific perspective, however, there is no generally accepted or accurate predictor of caries risk for individual patients, beyond obvious factors such as a patient who has received radiotherapy or has loss of saliva through disease, medication or surgery. Recognizing that the science in this area fails to provide clear guidance, workshop participants felt that the knowledge and experience of practitioners would permit them to

make reasonably good decisions in this regard.

Scientific evidence indicates that it is not necessary to provide a prophylaxis prior to a professionally-applied topical fluoride application.^{33,34} However, if a professional prophylaxis is performed selectively, due to staining or the need to remove plaque, a non-fluoridated prophylaxis paste is recommended for children under six years of age to help reduce fluoride ingestion.

With regard to professionally-applied topical fluorides, these recommendations are not particularly new, nor are they likely to generate difficult questions from patients. However, if a dentist's practise has been to provide all patients with professionally-applied topical fluoride treatments at recall, then some problems may arise. Clearly, the need for informed consent is appropriate. If a patient is used to this treatment, or expects it to occur, they should be informed of the likely benefits that they can expect. If they are given sound scientific

advice, they should be able to make informed decisions in this regard. ■

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Reprint requests to Dr. Clark.

References

1. Clark, D.C. Changing Trends in the Prevalence of Dental Fluorosis in North America: A Review of the Literature. *Comm Dent Oral Epidemiol*. In Press.
2. Levy, S.M. A review of fluoride exposures and ingestion. *Comm Dent Oral Epidemiol*. In Press.
3. Ismail, A.I. Fluoride supplements: current effectiveness, side effects, and recommendations. *Comm Dent Oral Epidemiol*. In Press.
4. Johnston, D.W. The current status of professionally applied topical fluorides. *Comm Dent Oral Epidemiol*. In Press.
5. Lewis, D.W. and Banting, D.W. Water fluoridation - current effectiveness and dental fluorosis. *Comm Dent Oral Epidemiol*. In Press.
6. Limeback, H. Enamel formation

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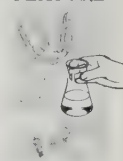
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and the effects of fluoride. *Comm Dent Oral Epidemiol*. In Press.

7. Stookey, G.K. Review of benefits vs. fluorosis risk of self-applied topical fluorides (dentifrices, mouth rinses and gels). *Comm Dent Oral Epidemiol*. In Press.

8. National Health and Medical Research Council, ed. *The effectiveness of water fluoridation*. Canberra: Australian Government Publishing Service, 1991:193.

9. U.S. Public Health Service. *Review of fluoride. Benefits and risks*. Department of Health and Human Services, 1991.

10. Beltran, E.D. and Burt, B.A. The pre- and post-eruptive effects of fluoride in the caries decline. *J Public Health Dent* 48(4):233-40, 1988.

11. Groeneveld, A., Van Eck, A.A.M.J. and Backer-Dirks, O. Fluoride in caries prevention: is the effect pre- or post-eruptive? *J Dent Res* 69(Spec Iss):751-755, 1990.

12. Thylstrup, A. Clinical evidence of the role of pre-eruptive fluoride in caries prevention. *J Dent Res* 69(Spec Iss):742-750, 1990.

13. Jenkins, G.N., Edgar, W.M. and Ferguson, D.B. The distribution and metabolic effects of human plaque fluorine. *Arch Oral Biol* 14:105-119, 1969.

14. Clark, D.C. The esthetic concerns of children and parents in relation to different classifications of the tooth surface index of fluorosis. *Comm Dent Oral Epidemiol*. In Press.

15. Armstrong, V.C., Holliday, M.G. and Schrecker, T.F. Tap water consumption in Canada. In: *Public Affairs Directorate*, Department of National Health and Welfare, 1981.

16. Ophaug, R.H., Singer, L., and Harland, B.F. Dietary fluoride intake of 6-month and 2-year-old children in four dietary regions of the United States. *Amer J Clin Nut* 42:701-707, 1985.

17. Burt, B.A. The changing patterns of systemic fluoride intake. *J Dent Res* 71(5):1228-37, 1992.

18. Pang, P.T.Y., Phillips, C.L. and Bawden, J.W. Fluoride intake from beverage consumption in a sample of North Carolina Children. *J Dent Res* 71:1382-1388, 1992.

19. Clouts, J. and Hargreaves, J.A. Fluoride intake from beverage consumption. *Comm Dent Oral Epidemiol* 16:11-15, 1988.

20. Last, J.M. *A dictionary of epidemiology*. New York: Oxford University Press, p. 31, 1983.

21. Clark, D.C., Hann, H.J., Williamson, M.F. et al. The effects of the lifelong consumption of fluoridated water or the use of fluoride supplements on dental caries prevalence. *Personal Communication*.

22. de Liefde, B. and Herbison, G.P. Prevalence of developmental defects of enamel and dental caries in New Zealand children receiving differing fluoride supplementation. *Comm Dent Oral Epidemiol* 13:164-167, 1985.

23. Granath, L., Widenheim, J. and Birkhed, D. Diagnosis of mild enamel fluorosis in permanent maxillary incisors using two scoring systems. *Commun Dent Oral Epidemiol* 13(5):273-6, 1985.

24. Holm, A.K. and Andersson, R. Enamel mineralization disturbances in 12-year old children with known early exposure to fluorides. *Commun Dent Oral Epidemiol* 10(6):335-9, 1982.

25. Pendrys, D.G. and Katz, R.V. Risk of enamel fluorosis associated with fluoride supplementation, infant formula, and fluoride dentifrice use. *Amer J Epidemiol* 130(6):1199-208, 1989.

26. Ismail, A.I., Brodeur, J.M., Kavanagh, M. et al. Prevalence of dental caries and dental fluorosis in students, 11-17 years of age, in fluoridated and non-fluoridated cities in Quebec. *Caries Res* 24(4):290-7, 1990.

27. Riordan, P.J. and Banks, J.A. Dental fluorosis and fluoride exposure in Western Australia. *J Dent Res*

70(7):1022-8, 1991.

28. Evans, R.W. and Stamm, J.W. An epidemiologic estimate of the critical period during which human maxillary central incisors are most susceptible to fluorosis. *J Public Health Dent* 51(4):251-9, 1991.

29. Clarkson, J. A European view of fluoride supplementation. *Brit Dent J* 172:357, 1992.

30. Koch, G., Peterson, L.G., Kling, E. et al. Effect of 250 and 1,000 ppm fluoride dentifrice on caries. *Swedish Dent J* 6:233-238, 1982.

31. Koch, G., Bergmann-Arnadottir, I., Bjarnason, S. et al. Caries-preventive effect of fluoride dentifrices with and without anti-calculus agents: a 3-year controlled clinical trial. *Caries Res* 24:72-79, 1990.

32. Winter, G.B., Holt, R.D. and Williams, B.F. Clinical trial of a low-fluoride toothpaste for young children. *Internat Dent J* 39:263-268, 1989.

33. Ripa, L.W., Leske, G.S., Sposato, A. et al. Effect of prior tooth cleaning on bi-annual professional acidulated phosphate fluoride gel-tray treatments. *Caries Res* 18:457-464, 1985.

34. Houpt, M., Koenigsberg, S., and Shey, Z. The effect of prior tooth cleaning on the efficacy of topical fluoride treatment: two-year results. *Clin Prevent Dent* 5(4):8-10, 1983.

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¹ American Dental Association Council on Dental Therapeutics. Acceptance of (synthetic phenol) disinfectant for instruments and equipment JADA 110 394, 1985



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A Macroeconomic Review of Dentistry in the 1980s

J.L. Leake, DDS

J. Porter, Dip., D.H.

D.W. Lewis, DDS

Health care's place in Canada's economy attracts much comment in scholarly texts,¹ the media² and abroad.³ Most of this attention is focused on Canada's publicly-financed system of hospital and medical services and other health-care benefits, such as prescription drugs and home-care services. Similarly, morbidity and mortality studies have focused concern on the cost of caring for patients with cardiovascular disease, injuries, cancer, and mental disorders, etc.⁴

Unfortunately, the costs of dental care are almost never included in these discussions, and little consideration is given to the economic value of dental health care services. While medicine is publicly financed in Canada, the direct public financing of dental care is not universal. Public participation varies from providing dental services directly to Native people in remote areas, to treating needy children and elderly people in Toronto. While these two examples involve federal and municipal government funding, respectively, the provinces also "insure" dental care or provide services directly in some cases.⁵ However, most of the dental services provided in Canada are paid for by individuals or private health insurers (on the behalf of individuals). These expenditures, because they are deemed private, are not scrutinized by the govern-

ment or reported. Therefore, most people do not appreciate how much Canadians spend on dental care each year, or the relative economic burden of dental diseases.

This review is a follow-up to a similar paper that the author published in 1984.⁶ It examines the economic position of dentistry in Canada in the 1980s, as well as the trends in dental care costs.

Methods

This review relies solely on publicly-available data sources. Where possible, the authors provide data for the start (1980), middle (1985) and end (1989) of the decade.

Data on health expenditures in Canada are maintained by Health and Welfare Canada. Dental care expenditures are obtained from Revenue Canada based on the gross professional incomes of the self-employed dentists in each province. Some adjustments on the year-to-year provincial mean earnings are made to even out fluctuations and to compensate for distortions in the reports from Alberta, where dentists can incorporate their practices.

These mean earnings are then multiplied by the number of dentists in each province. In certain jurisdictions, this figure is increased to include payments to the dentists and auxiliaries employed by the government to provide den-

tal care directly. The data underestimate the total costs of dental care in Canada, however, because the gross practice revenues of the country's 2,000 denturists are not included in the data base. Revenue Canada does not identify denturists as members of a separate occupation group for tax purposes.

Health and Welfare also compiles information on dental care expenditures from other sources. These include the public accounts in each province and territory, as well as the annual reports of workers' compensation boards across the country. Data for municipal expenditures are obtained from Statistics Canada's revue of the financial statements of local governments. Detailed descriptions of Statistics Canada's database and methods are found in a series of reports from Health and Welfare Canada.⁷

These data estimate direct costs only. Unmeasured indirect costs include lost productivity, which is largely due to patients having dental disease or parents taking children to and from their dental appointments. Similarly, other social costs such as the disability resulting from pain are not estimated.

Statistics Canada periodically surveys household expenditures⁸ to ensure that the "basket" of goods and services it uses to calculate the consumer price index (CPI) is consistent with current patterns of con-

TABLE I

Expenditures on Dental Care by Families of Two or More Canada, Selected Years

Survey Conducted in:	1978 16 Cities	1984 ¹ 17 Cities	1986 ² Urban and Rural Areas	1990 ³ 17 Metropolitan Areas
Current consumption in year by family (\$)	17,036	37,545	40,306	54,404
Average family expenditure on dental care:				
• Total (\$)	132.00	182.00	180.00	235.00
• Proportion of out-of-pocket expenses on health care (%)	47.4	39.7	37.5	35.0
• Proportion of current consumption (%)	0.77	0.48	0.44	0.43
Proportion of families reporting one or more dental expenses (%)	59.1	54.1	52.3	53.7

¹Statistics Canada. Family expenditure in Canada, selected cities, 1984. Ottawa, Canada. Minister of Supply and Services. Catalogue: 62-555. November 1986.

²Statistics Canada. Family expenditure in Canada 1986. Ottawa, Canada, Minister of Supply and Services. Catalogue: 62-655. March 1989.

³Statistics Canada. Family expenditure in Canada, 17 Metropolitan areas, 1990. Ottawa, Canada. Minister Industry, Science and Technology. Catalogue: 62-555. June 1992.

TABLE II

Level of Expenditures on Dental Services in Canada Compared to Gross Domestic Product and Total Health Care Expenditures, 1980, 1985 and 1989

	1980	1985	1989
Expenditures \$ Millions	1,308	2,222	3,095
Per cent of GDP ¹	0.42	0.46	0.48
Total Health Expenditures ²	5.8	5.5	5.5

¹Statistics Canada. Family expenditure in Canada, selected cities, 1984. Ottawa, Canada. Minister of Supply and Services. Catalogue: 62-555. November 1986.

²Statistics Canada. Family expenditure in Canada 1986. Ottawa, Canada, Minister of Supply and Services. Catalogue: 62-655. March 1989.

sumption. As part of the "basket," families are asked to provide information on their out-of-pocket expenses for health care, including dental care.

The other component of the CPI is the price paid. To obtain this information, Statistics Canada⁹ surveys a total of 112 dentists, representing each province and territory. Data are obtained on the fees charged for four distinct services: a two-surface amalgam on a permanent molar; a recall examination and prophylaxis; root canal therapy on a single-rooted tooth; and complete upper and lower den-

tures, including laboratory charges. In addition, population estimates are issued regularly by Statistics Canada, and are shared with other departments.¹⁰

Findings

Table I presents data from two household surveys conducted in the 1980s, along with similar data for 1978 and 1990. The surveys show that the decline in the number of families making out-of-pocket expenditures for dental care, noted in earlier reviews, appears to have bottomed out at about 52 to 54 per cent.

Similarly, as a proportion of current consumption, out-of-pocket expenditures on dental care appear to have declined to a constant 0.44 to 0.43 per cent. However, as a percentage of out-of-pocket expenditures on total health care, dental expenditures have declined from their peak of 47.4 per cent in 1978 to a new low of 35 per cent in 1990.

Table II shows the total amount spent on dental services in Canada in 1980, 1985 and 1989. These expenditures are compared to Canada's national indicator of economic output, the gross domestic product, and the total expenditures on health care. Dental expenditures (in current dollars) rose from \$1.308 million in 1980 to \$3.095 million in 1989. At the beginning of the 1980s, Canadian expenditures on dental services made up 0.42 per cent of all the goods and services produced in Canada. By 1985, this figure had risen to 0.46 per cent and by 1989 to 0.48 per cent. As a percentage of total health care costs, however, dental expenditures fell from 5.8 per cent in 1980 to 5.5 per cent in 1985 and 1989.

Table III shows dental expenditures for 1980, 1985 and 1989, and compares them to population levels, as well as price indexes for dental services in the CPI and the "all items" CPI. In each case, a new index has been calculated, based on 1980 = 100.

From 1980 to 1989, Canada's population increased by nine per cent, from 24.2 million to 26.4 million. Dental prices increased by 69 per cent in that period, which compares to the 70 per cent rise in the CPI over the same period. Over the years covered by this review, total expenditures on dental care rose from \$1.31 billion in 1980, to \$2.22 billion in 1985 and \$3.09 billion in 1989, for a total increase of \$1.78 billion. This represents an increase of 136 per cent over the 1980 base, and far exceeds the increase for both population (nine per cent) and prices (69 per cent or 70 per cent).

Separate calculations, not shown in **Table III**, demonstrate that the growth in population

TABLE III

Increase in Dental Care Expenditures Related to Price and Population Increases, 1980, 1985 and 1989

	Dental Expenditures		Population		Dental Price \$		Consumer Price Index	
	\$ Billions	Index	Millions	Index	Base 1986	Base 1980	Base 1986	Base 1980
1980	1.31	100	24.2	100	64.2	100	67.2	100
1985	2.22	169	25.3	104	75.5	149	96.0	143
1989	3.09	236	26.4	109	108.7	169	114.0	170

would account for seven per cent of the \$1.78 billion increase in dental expenditures, the price increase for another 51 per cent, and the interaction of both variables for a further six per cent. Thus, \$650 million, or 37 per cent of the \$1.78 billion increase, cannot be attributed to either population or price increases.

Table IV shows the current dollar expenditures for dental care in Canada and for each province and territory in 1980, 1985, and 1987. By province data for 1989 were not available at the time of writing. Also shown is the percentage of the dental services paid for out of public funds. Overall, public funds account for 13 to 15 per cent of dental expenditures, but this figure varies greatly between provinces. For example, in 1985 it ranged from two per cent in Ontario to 92 per cent in the territories. The percentage of dental expenditures paid by public sources also varied within provinces over time. In Newfoundland and British Columbia, for example, the extent of public spending fell, whereas in the prairie provinces the trend was to increase the public share.

In addition, the actual dollar amounts spent on dental services increased in every province and territory over the 1980s relative to the 1970s.

Table V shows dental expenditures per person in Canada, each province and the territories from 1980 to 1989. Nationally, these expenditures – unadjusted for inflation – more than doubled, rising from \$54.35 in 1980 to \$117.78 in 1989, an increase in spending of 117 per cent per person.

By province, the mean dental expenditures per person were highest in British Columbia, fol-

lowed closely by Alberta and Ontario. In Manitoba, per person dental expenditures were close to the national average, but in all other jurisdictions, per capita dental expenditures were less than this amount. Of particular note are the extremely low levels of per person dental expenditure in the two territories and Newfoundland. The rate of increase was greatest in Nova Scotia, where mean dental expenditures per person rose 134 per cent from 1980 to 1989. Mean per person dental expenditures more than doubled in every province during the 1980s, except in British Columbia and the territories.

Dental expenditures are by and large a weighted sum of the prod-

uct of services times the prices charged for those services. Since price increases have not exceeded inflation, the increase in dental expenditures is due to more services. While the number of dental services is not recorded, historical data on the number of providers, shown in **Table 6**, indicate that Canada experienced a 46 per cent increase in the number of licensed dental health care providers during the 1980s. The largest absolute increase (4,156 people) and rate of increase (108 per cent) occurred among dental hygienists. The next highest increase (3,082 people) occurred among dentists, even though their rate of increase was only 28 per cent. The numbers of

TABLE IV

Total Expenditures for Dental Care and Per Cent Public by Province 1980, 1985 and 1987

	1980		1985		1987	
	\$ Millions	% Public	\$ Millions	% Public	\$ Millions	% Public
Newfoundland	11.0	47	18.6	42	20.5	38
Prince Edward Island	4.5	31	7.0	21	8.7	29
Nova Scotia	31.1	25	59.4	26	74.1	31
New Brunswick	19.7	6	33.9	11	36.6	4
Quebec	247.4	41	359.9	32	491.3	36
Ontario	523.3	2	957.2	2	1,145.6	3
Manitoba	53.3	15	84.1	15	114.3	28
Saskatchewan	47.0	25	76.1	26	87.9	33
Alberta	140.1	12	249.0	17	297.5	16
British Columbia	229.1	12	347.2	11	404.2	5
Territories	1.6	56	2.4	92	2.8	75
Canada	1,308.3*	15	2,221.8*	13	2,683.5*	14

*May or may not add due to rounding.
Source: Health and Welfare Canada

dental therapists and denturists also grew, but account for less than seven per cent of the total growth in dental personnel.

These data do not include the many chairside dental assistants and clerical staff employed by dentists, nor the technicians employed by commercial dental laboratories to fabricate prosthetic devices and appliances.

Table VII shows the direct economic cost of dental care in comparison to other disease categories in 1986. The \$2.418 billion understates the cost of dental disorders, since it includes payments to dentists only, omitting payments to denturists as well as the costs of drugs or hospitalization associated with treating dental diseases. Even so, the direct costs of treating dental disorders are surpassed only by those of cardiovascular (heart and stroke) diseases and mental disorders. Dental costs exceed those for respiratory and digestive diseases, injuries and cancer.

Discussion

Following the trend observed since 1960, the economic market for dental services has continued to grow during the 1980s. This growth can be seen through indicators such as dental expenditures as a percentage of GDP (0.42 per cent to 0.48 per cent), total dental expenditures (\$1.3 billion to \$3.1 billion), total dental expenditures in constant (1980) dollars (\$1.31 billion to \$1.82 billion), mean dental expenditures per person (\$54.35 to \$117.78) or mean dental expenditures per person in constant (1980) dollars (\$54.35 to \$69.45). Over and above inflation, the increase in total dental expenditures was 39 per cent, while the increase in the mean dental expenditures per person was 28 per cent.

The increase in the dental price index (based on the four dental services tracked by Statistics Canada for the dental component of the Consumer Price Index) was 69 per cent, compared to the rise in the CPI (all items) of 70 per cent during the decade. Since, by and large, expenditures are the product of the fees charged for dental services and the volume of those services, the

TABLE V

Mean Expenditures Per Person for Dental Care and Per cent Increase in Canada, Territories and Provinces, 1980-1989

Dollars Per Person ¹				
	1980	1985	1989	Per cent Increase 1980-89
Newfoundland	19.40	32.66	41.02	111
Prince Edward Island	36.84	55.80	80.11	117
Nova Scotia	36.82	68.24	86.24	134
New Brunswick	28.34	47.73	62.76	121
Quebec	38.71	55.23	87.67	126
Ontario	61.03	106.14	137.44	124
Manitoba	52.02	79.11	117.23	125
Saskatchewan	48.91	75.40	98.58	102
Alberta	65.21	106.04	143.35	120
British Columbia	85.75	130.21	145.54	70
Territories	24.07	32.05	33.01	37
Canada	54.35	88.23	117.78	117
1980 = 100*	54.35	61.78	69.45	28

* Deflated by the CPI (all items) ¹Source: Health and Welfare Canada

TABLE VI

Increase in Personnel Active in Providing Dental Care, 1980-1989

	1980	1985	1989
Number of:			
Licensed dentists ¹ (Index ¹)	11,095 (100)	13,027 (117)	14,177 (128)
Licensed dental hygienists ¹ (Index ¹)	3,862 (100)	5,758 (149)	8,018 (208)
Licensed dental therapists (Index)	244 ^{2*} (100)	n/a n/a	365 ³ (149)
Denturists (Index)	1,526 ² (100)	n/a n/a	1,925 ³ (126)
Total (Index)	16,724 (100)	n/a n/a	24,485 (146)

*Note: 1983 data

¹Source: Health and Welfare Canada. Health personnel in Canada 1989. Ottawa, Canada, Minister of Supply and Services, 1991.

²Source: Leake, J.L. Expenditures on dental services in Canada, Canadian Provinces and Territories 1960-80. *J Canad Dent Assoc* 50(5):362-368, 1984.

³Source: Lewis, D.W. The provision of dental care in Canada. In: *Dentistry, dental practice and the community*, ed. 4, Eds. Burt, B.A. and Eklund, S.A. Philadelphia, Saunders, 1992.

growth in expenditures must have come from the provision of more services.

Similarly, the ability of the delivery system to produce more services has increased through the addition of more personnel. Over the

1980s, the number of dental personnel in Canada grew by 46 per cent from about 16,700 in 1980 to nearly 24,500 by 1989. However, since the deflated growth in overall dental expenditures was 39 per cent, the marginal productivity of

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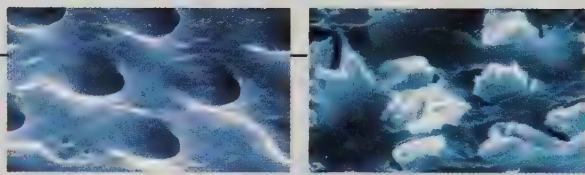
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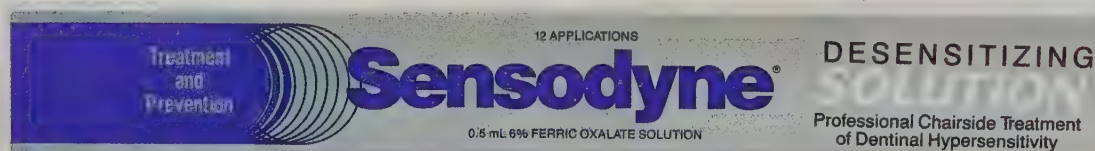
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TABLE VII
Direct Costs¹ of Illness in Canada, 1986

Disease Category	\$ Millions
1. Cardiovascular Diseases	4,909
2. Mental disorders	2,551
3. Dental disorders	2,418
4. Respiratory diseases	2,365
5. Digestive diseases	2,132
6. Injuries	1,971
7. Cancer	1,881

¹Dental care costs include payments to dentists only. For all others they include medical, hospital and drug costs.

Sources:

1. Health and Welfare Canada. National Health Expenditures in Canada 1975-87. Ottawa, Canada, Minister of Supply and Services, 1990; Health Information Division: Cat H21-99/1190E.
2. Wigle, D.T., Mao, Y., Wong, T. and Lane, R. Economic burden of illness in Canada 1986: Chronic Diseases in Canada 12(3) supplement, May-June 1991. Health and Welfare, Canada.

the new personnel has fallen.

The level of dental expenditures per person continues to vary markedly between the provinces and territories. In the territories, for example, the mean dental expenditures per person in 1989 were about \$32.98, or less than one-quarter of the dental expenditures per person in British Columbia. Over the decade, the national rate of increase in current dental expenditures per person was 117 per cent. Only in the territories and in British Columbia did the mean dental expenditures per person fail to double.

Public expenditures on dental care averaged 13 to 15 per cent of total expenditures in this area over the decade. While provincial trends varied, toward the end of the 1980s, the level of public funding ranged from three to five per cent in Ontario, New Brunswick and British Columbia, from 28 to 38 per cent in six other provinces, and a substantial 75 per cent in the territories.

The survey data on family dental expenditures are of limited value, since they do not include the expenses paid by private insurers. Nonetheless, they do show that out-of-pocket dental expenditures have declined since 1978, but are holding at 35 per cent of the total expenditures on health care and 0.43 per cent of current consumption.

New to this review is an estimate

of the economic impact of treating dental diseases relative to the costs of treating other diseases. While many other diseases have importance because of the morbidity and mortality attributed to them, the (understated) direct costs of dental diseases rank third, behind those of treating cardiovascular diseases and mental disorders.

Summary

Dental expenditures in Canada receive less attention than other expenditures in the health care sector. Using publicly-available records, the authors have shown that the overall expenditures on dental care rose from \$1.3 billion to \$3.1 billion during the 1980s, or from \$54.35 per person to \$117.78 per person. Inflation and population growth would account for about 64 per cent of the increase, and the balance (\$650 million) would therefore result from more services being provided. Per capita dental expenditures by province and territory show that people in the territories purchase the least care (\$33.01 per person in 1989) and those in British Columbia purchase the most care (\$145.54 per person in 1989). Even though some costs are not included in the data sources used for this paper, the direct costs of preventing and treating dental diseases ranks third among all diseases or conditions, exceeded only by the

costs related to cardiovascular diseases and mental disorders. ■

Dr. Leake and Dr. Lewis are professors in the department of community dentistry, faculty of dentistry, at the University of Toronto, and conduct much of their research with the Community Dental Health Services Research Unit.

Ms Porter is a student in the B.Sc. dental hygiene program.

References

1. Evans, R.G. and Stoddard, G.L. *Medicare at maturity: achievements, lessons and challenges*. Calgary: University of Calgary Press, 1986.
2. Rachlis, M. and Kushner, C. Under the knife: will Canada's health care system survive the hatchet job being done on it by self-serving critics? *Report on Business Magazine*. October: 81-91, 1992.
3. United States General Accounting Office. Canadian health insurance: lessons for the United States — a report to the chairman, committee on government operations, House of Representatives. Washington: U.S. General Accounting Office, (GAO/HRD 91-90), 1991.
4. Wigle, D.T., Mao, Y., Wong, T. et al. Economic burden of illness in Canada 1986; Health and Welfare Canada. *Chronic Diseases in Canada* 12(3): supplement, Ottawa, Canada, May-June, 1991.
5. Stamm, J.W., Waller, M., Lewis, D.W. et al. *Dental care plans in Canada: historical developments, current status and future directions*. Ottawa, Canada, Minister of Supply and Services, 1986.
6. Leake, J.L. Expenditures on dental services in Canada, Canadian Provinces and Territories 1960-80. *J Canad Dent Assoc* 50(5):362-368, 1984.
7. Information Systems Directorate: Policy Planning and Information Branch. Department of National Health and Welfare. *National Health Expenditures in Canada 1975-87*. Health Information Division: Cat H21-99/1990E, Ottawa, Canada, 1990.
8. Statistics Canada. *Family Expenditures in Canada*. Ottawa, Canada, Minister of Supply and Services, various years.
9. Statistics Canada, Consumer Prices Section. Personal communication to J. Porter: Ottawa, Canada, March 18, 1992.
10. Statistics Canada: Policy Planning and Information Branch, Department of National Health and Welfare. *Population estimates for Canada and the Provinces, 1961-90*. Reference tables from Health Information Division, Policy Planning and Information Division: Ottawa, Canada, 1992.



Adénome pléomorphe

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Montréal

SOMMAIRE

Un cas clinique d'adénome pléomorphe d'une glande salivaire mineure au palais est diagnostiqué et traité par le département de chirurgie maxillo-faciale à l'hôpital Notre-Dame de Montréal. Les signes et symptômes de l'adénome pléomorphe sont discutés ainsi que le rapport radiologique et l'étude histopathologique. Le traitement choisi est une excision chirurgicale complète de la tumeur en incluant le périoste au palais et suivie de la pose d'un obturateur préfabriqué en acrylique.

ABSTRACT

A clinical case involving a pleomorphic adenoma at a minor salivary gland of the palate is diagnosed and treated by the Department of maxillo-facial surgery at the Notre-Dame Hospital, in Montreal. The signs and symptoms of this adenoma are discussed together with the X-ray report and the histopathological examination. The treatment chosen is a surgical excision of the whole tumor, including the periosteum of the palate, followed by the installation of a prefabricated acrylic obturator.

Rapport de cas

Un homme dans la trentaine et de race noire se présente à la clinique ex-

terne pour une enflure persistante au palais. Le patient se plaint d'une gêne au palais depuis trois (3) ans et d'une difficulté accrue à la déglutition lors des repas. Il indique également que la masse s'est élargie progressivement durant ces années.

L'évaluation générale et l'examen extra-oral sont dans les limites de la normale. On note à l'examen intra-oral une masse fibreuse au palais gauche d'une dimension de 4,5 x 3,5 x 3 cm (**photo 1**). L'étude tomographique du sinus et du maxillaire supérieur gauche montre une masse de densité des tissus mous. Cette masse est située en regard de l'arcade dentaire supérieure et fait saillie légèrement dans le recessus inférieur de l'antra du maxillaire gauche. Il y a peu de destruction osseuse par rapport à l'ampleur de la masse. Le rapport radiologique de la tomodensitométrie du massif facial (**photo 2**) montre une masse de la densité des tissus mous comblant la moitié gauche de l'oropharynx et débordant la ligne médiane.

Le traitement choisi fut une excision chirurgicale complète de la tumeur (**photo 3 et 4**). Pour éviter une récurrence possible, le périoste fut enlevé avec la lésion. On note une destruction osseuse au palais en forme de cratère due à la pression exercée par la tumeur durant son évolution (**photo 5**). Une grande partie osseuse du palais é-

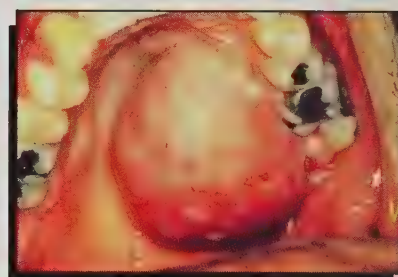


Photo 1

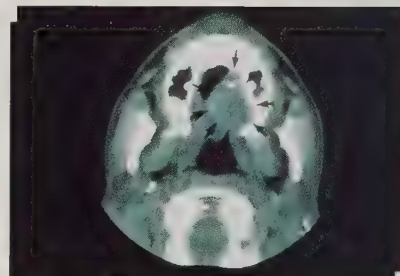


Photo 2

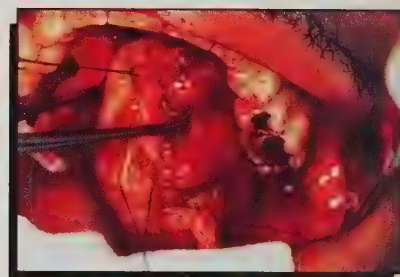


Photo 3

tant maintenant exposée, un obturateur préfabriqué acrylique (ressemblant à un Hawley) fût inséré en position (**photo 6**).

On remarque à l'examen histopathologique (**photo 7**) qu'il s'agit d'un nodule tumoral, encapsulé,

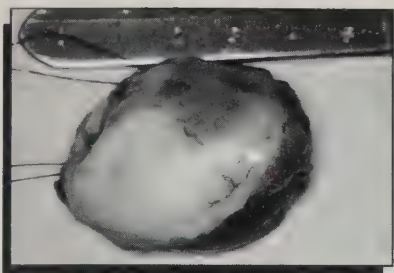


Photo 4

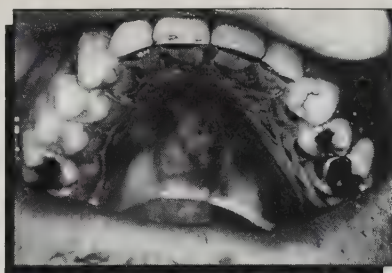


Photo 6

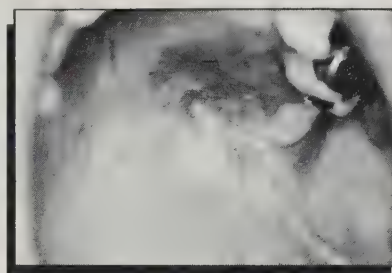


Photo 8

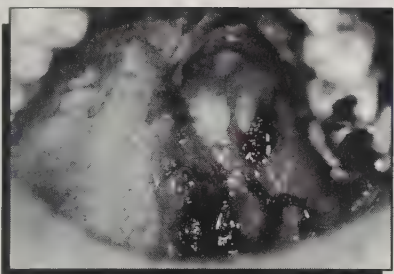


Photo 5

revêtu de muqueuse malpighienne et partiellement circonscrit par une glande salivaire mineure. Ce nodule apparaît donc prendre naissance au niveau de la muqueuse et non au niveau du tissu osseux. Il est, par ailleurs, subdivisé en quelques lobules par des septas conjonctifs. Bien que dans certaines zones de la prolifération tumorale, l'aspect morphologique

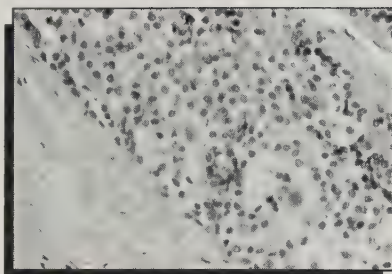


Photo 7

peut présenter certaines ressemblances avec la tumeur de Pindborg, la tumeur comporte des critères qui en diffèrent sensiblement, à savoir la présence de formation canalaire, la présence de zones de sécrétion mucipare, l'absence d'amyloïde et l'absence de calcification. De façon globale, l'aspect histologique observé est celui d'une tumeur mixte d'une glande sali-

vaire mineure (adénome pléomorphe).

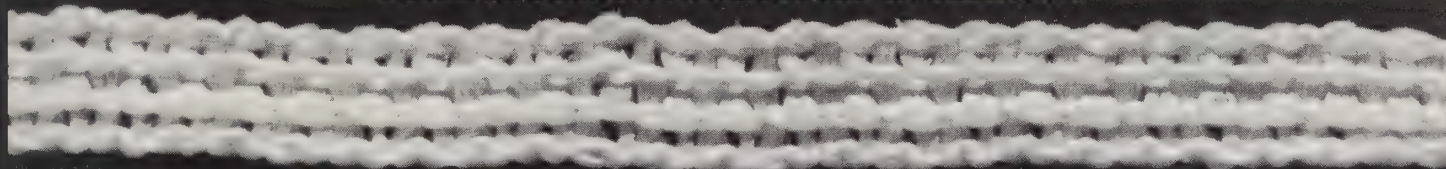
Le patient fût hospitalisé pour la journée de l'opération et reçut congé le lendemain. Le contrôle post-opératoire fût d'une, deux et six semaines (photo 8).

Discussion:

L'adénome pléomorphe (AP) ou tumeur mixte se classe parmi les tumeurs épithéliales bénignes. D'une façon statistique, l'AP se retrouve après la trentaine et plus souvent chez les femmes. L'AP représente soixante-quinze pourcent (75%) de l'incidence des tumeurs des glandes salivaires. Etant considéré comme une tumeur bénigne, l'AP date généralement de longue durée (des années), possède une croissance lente et asymptomati-



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que. Au palais, l'AP ne produit pas de radiotranslucidité diffuse ou d'hypermobilité des dents. Le site d'origine des tumeurs des glandes salivaires mineures suivant un ordre décroissant est :

1. palais
2. lèvre
3. langue
4. joue
5. plancher buccal

On croit que les tumeurs des glandes salivaires sont plus fréquentes au palais dur qu'au palais mou. Cela est probablement dû à un plus grand nombre de glandes présentes au palais dur comparativement au palais mou. Au microscope, l'AP possède une image et un patron histologique variés et inhabituels (d'où la provenance du terme pléomorphe). Les caractéristiques de la plainte notent habituellement l'histoire d'un nodule en croissance, peu ou pas de douleur, mais plutôt un inconfort (tel la dysphagie reporté). On remarque qu'il n'existe pas d'ulcération même si la tumeur a atteint cette dimension.

Le traitement de choix reste une excision chirurgicale. La lésion au palais dur devrait être excisée en incluant les muqueuses qui la recouvrent. L'AP est le néoplasme

bénin des glandes salivaires qui possède la plus grande chance de récurrence après le traitement (5% à 30%). Une surveillance de l'évolution post-opératoire est recommandée, car ce type de tumeur, bien que bénigne, comporte un potentiel de récurrence. ■

D' Simon Dang Tuan Tran était résident de l'hôpital Notre-Dame de Montréal. Présentement, il est résident en périodontie combiné avec un doctorat en biologie orale, au département de dentisterie pédiatrique de l'Université du Minnesota.

D' Edouard Cree est chirurgien maxillo-faciale et chef de la section de chirurgie maxillo-faciale de l'hôpital Notre-Dame de Montréal.

Les demandes de tirés à part peuvent être envoyées au **D' Simon Dang Tuan Tran**, University of Minnesota, 6-150 Moos Tower, 515 Delaware St. S.E., Minneapolis, MN 55455

Références

1. Bhaskar, S.N. *Synopsis of oral pathology*, ed. 7, St. Louis, Mosby, 1986.
2. Shafer, W.G., Hine, M.K., Levy, B.M. *A textbook of oral pathology*, ed. 4, Philadelphia, Saunders, 1983.
3. Wood, N.K. and Goaz, P.W. *Differential diagnosis of oral lesions*, ed. 3, St. Louis, Mosby, 1985.
4. Eversole, L.R. *Clinical outline of oral*

pathology: diagnosis and treatment, ed. 2, Philadelphia, Lea & Febigh, 1984.

5. Chau, M.N. and Radden, B.G. A clinical-pathological study of 53 intra-oral pleomorphic adenomas. *Intern J Oral Max Surg* 18(3):158-62, 1989.

6. Waldron, C.A., El-Mofty, S.K. and Gnepp, D.R. Tumors of the intraoral minor salivary glands: a demographic and histologic study of 426 cases. *Oral Surg, Oral Med, Oral Path* 66(3):323-33, 1988.

7. McGregor, A.D., Burgoyne, M. and Tan, K.C. Recurrent pleomorphic salivary adenoma - the relevance of age at first presentation. *Brit J Plast Surg* 41(2):177-81, 1988.

8. Grewal, D.S., Pusalkar, A.G., Phatak, A.M. Pedunculated pleomorphic adenoma of the tongue base manifesting with dyspnea. A case report. *J Laryng and Otol* 98(4):425-7, 1984.

9. Sim, D.W., Maran, A.G., Harris, D. Metastatic salivary pleomorphic adenoma. *J Laryng and Otol* 104(1):45-7, 1990.

10. Klijanienko, J. et al. Clear cell carcinoma arising in pleomorphic adenoma of the minor salivary gland. *J Laryng and Otol* 103(8):789-91, 1989.

11. Touquet, R., Mackenzie, I.J. and Caruth, J.A. Management of the parotid pleomorphic adenoma, the problem of exposing tumor tissue at operation. The logical pursuit of treatment policies. *Brit J Oral Max Surg* 28(6):404-8, 1990.

12. Jones, J.A. and McWilliam, L.J. Intraoral neurilemmoma (schwannoma): an unusual palatal swelling. *Oral surg, Oral Med, Oral Path* 63(3):351-3, 1987.

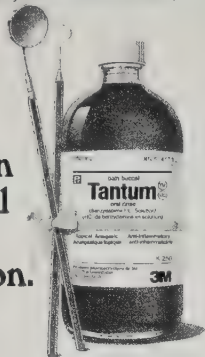
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Contraindications

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Precautions

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References:

- Simard-Savoie S and Forest D. *Curr Ther Res* 1978; 23(6):734-45.
- Whiteside MW. *Curr Med Res Opin* 1982;8:188-9.
- Wethington JF. *Clin Ther* 1985;7(5):641-6.
- Product monograph.
- Yankell SL. Evaluation of benzylamine HCl in patients with aphthous ulcers. *The Compendium of Continuing Education* 1981; 11(1).
- Epstein JB. *Int J Radiation Oncology Biol Phys* 1989; 16(6):1571-5.

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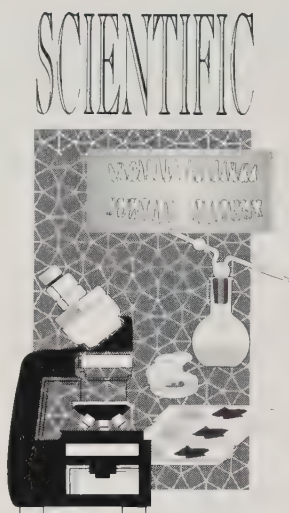
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Viadent Anti-Plaque Toothpaste: Tubes of 50 mL, 100 mL.

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A Review of Commonly Prescribed Oral Antibiotics in General Dentistry

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ABSTRACT

The microflora associated with odontogenic infections are typically mixed and of indigenous origin. *Streptococcus*, *peptostreptococcus*, *peptococcus*, *fusobacterium*, *bacteroides*, and *actinomyces* species are the principle microflora isolated from these infections. Penicillin V (phenoxymethyl penicillin) remains the antimicrobial of choice for the initial empirical treatment of odontogenic infections. This agent is safe, highly effective and inexpensive. Amoxicillin has little indication for the routine treatment of odontogenic infections. However, it is the agent of choice for endocarditis prophylaxis, as it produces higher serum levels than penicillin V. Erythromycin may be used for mild, acute odontogenic infections in penicillin-allergic patients. The high incidence of gastrointestinal disturbances and superinfection commonly associated with the ingestion of tetracycline limits its role in general dental practice. Tetracycline may be considered as an alternative therapy for penicillin-allergic patients over the age of 13 who cannot tolerate erythromycin. Clindamycin is very effective against all odontogenic pathogens, but its potential gastrointestinal toxicity relegates it to third- or even fourth-line therapy in general den-

tistry. Although metronidazole displays excellent activity against anaerobic gram-negative bacilli, it is only moderately effective against facultative and anaerobic gram-positive cocci, and should not be used alone in the treatment of acute odontogenic infections.

SOMMAIRE

Les microflores des infections odontogènes sont ordinairement mêlées et d'origine indigène. Le *Streptococcus*, le *Peptostreptococcus*, le *Peptococcus*, le *Bacillus fusiformis*, les *Bactéroides* et les *Actinomyces* composent les principales microflores isolées de ces infections. Pour le premier traitement empirique de ces infections odontogènes, la pénicilline V (p. phénoxy méthyle) reste l'antimicrobien de prédilection. Cet agent est sûr, très efficace et peu coûteux. Pour le traitement régulier de ces infections, l'amoxicilline n'est guère indiquée. Cependant, c'est l'agent qu'on privilégie pour la prophylaxie endocarditique puisqu'il produit de plus grands taux de sérum que la pénicilline V. L'érythromycine peut être utilisée pour les infections odontogènes bénignes et aiguës chez les patients allergiques à la pénicilline. Par ailleurs, l'incidence élevée de désordres gastro-intestinaux et de surinfections communément asso-

ciés à l'ingestion de la tétracycline en limite l'usage en dentisterie générale. La tétracycline peut cependant servir comme autre choix pour les patients de plus de 13 ans allergiques à la pénicilline et incapables de tolérer l'érythromycine. La clindamycine est très efficace contre tous les agents odontogènes, mais comme elle peut causer des problèmes gastro-intestinaux, on la place au troisième et même au quatrième rang en dentisterie générale. Enfin, bien que le métronidazole agisse très bien contre les bacilles à germes anaérobies Gram négatif, son effet est plutôt modéré sur les cocci facultatifs et à germes anaérobies Gram positif, et on ne doit pas l'utiliser seul pour traiter les infections odontogènes aiguës.

The Microbiology of Odontogenic Infections

The complexity of oral microflora is well documented. An estimated 300 microbial species colonize the adult oral cavity.¹⁻⁶ In patients with normal immune function, acute purulent odontogenic infections generally do not occur without a predisposing local factor (e.g., dental calculus, necrotic pulp tissue, tissue damage due to trauma or surgical manipulation), which permits the



TABLE I Predominant Indigenous Oral Microflora

Bacterial Type	Predominant Genus or Group
Facultative gram-positive cocci	Streptococcus S. mutans S. sanguis S. mitior S. salivarius
Facultative gram-positive bacilli	Lactobacillus
Anaerobic gram-positive cocci	Peptostreptococcus
Anaerobic gram-positive bacilli	Actinomyces Eubacterium Lactobacillus
Anaerobic gram-negative cocci	Veillonella
Anaerobic gram-negative bacilli	Fusobacterium Bacteroides fragilis group non-Bacteroides fragilis group

invasion of resident microflora into underlying tissue. Clinically, approximately 60 per cent of odontogenic infections are mixtures of facultative and anaerobic bacteria (Table I).^{1,5} More than 85 per cent of odontogenic infections involve obligate anaerobic bacteria, with 35 per cent of these infections involving obligate anaerobes exclusively.¹ Facultative bacteria are seldom present alone (five per cent of infections).^{1,4} Mixed infections generally contain streptococci as well as anaerobic species, principally bacteroides, fusobacterium, peptostreptococcus, peptococcus, veillonella, actinomyces, and lactobacillus.¹ Streptococci account for up to 95 per cent of the facultative bacteria isolated from cultures,⁴ and peptostreptococcus, peptococcus, bacteroides, fusobacterium, actinomyces, and streptococcus species have been identified as the primary etiologic bacteria in odontogenic infections.⁴ Odontogenic infection composition changes with time. Facultative bacteria (streptococci) predominate in initial cellulitis, while anaerobic bacteria become increasingly prevalent as an infection develops, and may be the only bacteria present in chronic ab-

scences.⁵ Thus, odontogenic infections are predominantly caused by indigenous oral microflora (facultative and obligate anaerobes), which become pathogenic when they are allowed to establish infection.

Appropriate Antibiotic Use

The risk-benefit ratio of antibiotic therapy (toxicity versus efficacy) should be considered individually for each patient. Antibiotic agents should be prescribed for patients only if a significant bacterial infection is diagnosed or strongly suspected, or if there is an established indication for prophylaxis. The excessive use of antibiotic agents for minor infections and nonbacterial illnesses, in addition to being an unnecessary cost, subjects the patient to the risks of drug toxicity and superinfection, and constitutes a public health hazard due to the ecologic pressure favoring the selection of bacteria resistant to antimicrobial agents. Odontogenic infections are usually self-limiting, but serious complications may ensue.⁶ Successful infection resolution depends predominantly on the integrity of host defense mechanisms and, if required, the drainage and debridement of in-

fectured tissues.¹ The source of infection must be removed or other modes of therapy will likely fail. Although culture and sensitivity testing would be preferable, empirical antibiotic treatment, when necessary, may be instituted with confidence because the most common etiologic bacteria are known.^{1,5} Antibacterial agents effective in the treatment of odontogenic infections are summarized in Table II.

Antibiotic Agents

Penicillins and Cephalosporins

Penicillin V (phenoxymethyl penicillin) was one of the first penicillins discovered, and it remains an essential therapeutic modality in dentistry. As a group, orally-absorbed penicillins yield peak serum levels one to two hours after ingestion. Food delays absorption, and results in lower peak serum levels, two to three hours after ingestion, with all penicillins except amoxicillin.³ Penicillins are well distributed to most tissues and fluids of the body, undergo only minimal metabolism, and are removed primarily by renal excretion.¹⁰ The major adverse effects of the penicillins are hypersensitivity reactions, which range in severity from rash to immediate anaphylaxis. Penicillin rashes are maculopapular and pruritic. They are delayed hypersensitivity reactions that occur in approximately seven per cent of treatment courses and usually begin within three to 10 days of treatment initiation. When this type of late allergic reaction occurs, it is best to discontinue the penicillin and institute therapy with erythromycin. Anaphylactic reactions to penicillins are uncommon, occurring in only 0.2 per cent of 10,000 courses of treatment, with 0.001 per cent out of 100,000 cases resulting in fatality.³ Gastrointestinal disturbances (e.g. diarrhea) may follow the use of any oral penicillin, but have been most pronounced with ampicillin. Penicillins may impair oral contraceptive efficacy. Practitioners should instruct patients to continue their oral

TABLE II
Oral Antibacterial Agents

Antibacterial	Common Brand Names ¹	Oral Formulations Available	Price per Tablet, Capsule or 5 mL	Common Oral Adult Dosage Regimens ²	Bacterial Spectrum ³	Major Antibacterial-Drug Interactions	Untoward Effects
Penicillin V (potassium)	PVF-K 500 V-Cillin K	300 mg tablet 125 mg/5 mL suspension 250 mg/5 mL suspension 300 mg/5 mL suspension	\$0.05 \$0.15 \$0.30 \$0.19	300 mg q6-8h	Actinomyces, Peptostreptococcus, Peptococcus, Bifidobacterium, some Bacteroides (not B. fragilis), Fusobacterium, susceptible Streptococcus, some Staphylococcus (10%)	impairs oral contraceptive efficacy, tetracycline or erythromycin, may impair penicillin efficacy	hypersensitivity reactions (e.g. rashes)
Amoxicillin	Amoxil	250 mg capsule 500 mg capsule 125 mg/5 mL suspension 250 mg/5 mL suspension 125 mg chewable tablet 250 mg chewable tablet	\$ 0.11 \$ 0.26 \$ 0.13 \$ 0.19 \$ 0.30 \$ 0.42	250-500 mg q8h	similar to penicillin V, increased activity against gram-negative cocci and bacilli such as Haemophilus influenza	similar to penicillin V	similar to penicillin V (higher incidence of rashes)
Cloxacillin	Orbenin	250 mg capsule 500 mg capsule	\$ 0.14 \$ 0.26	250-500 mg q6h	active against penicillinase producing staphylococci	similar to penicillin V	similar to penicillin V
Erythromycin Base ⁵	E-mycin	250 mg tablet	\$ 0.06	250-500 mg q6h	anaerobic activity less than penicillin V	may elevate serum theophylline levels, may impair oral contraceptive efficacy	gastrointestinal upset is common
Enteric-Coated Erythromycin Base	Eryc Erybid	125 mg capsule 250 mg capsule 333 mg capsule 500 mg tablet	\$ 0.37 \$ 0.24 \$ 0.34 \$ 0.81	333 mg q8h 500 mg q12h			gastrointestinal upset less common
Tetracycline	Tetracycl	250 mg capsule	\$ 0.03	250-500 mg q6h	several gram-negative bacilli are resistant, many aerobic and anaerobic gram-positive and gram-negative bacteria are susceptible, however clinically resistance develops rapidly	impairs oral contraceptive efficacy, chelates divalent and trivalent cations, H ₂ receptor antagonists, may interfere with tetracycline absorption	gastrointestinal irritation, photosensitivity, superinfection
Clindamycin	Dalacin C	150 mg capsule	\$ 0.82	150 mg q6-8h	aerobic gram-positive cocci including staphylococci, most anaerobes including B. fragilis		diarrhea, pseudomembranous colitis
Metronidazole	Flagyl	250 mg tablet 500 mg capsule	\$ 0.04 \$ 0.78	250-500 mg q8h	Bacteroides sp. including B. fragilis, Fusobacterium and Clostridium, only moderate activity against anaerobic gram-positive cocci	may impair oral contraceptive efficacy, inhibits metabolism of warfarin, phenobarbital enhances and cimetidine reduces metronidazole clearance	alcohol ingestion is strongly discouraged (disulfiram effect), darkens urine, metallic taste

¹ Not all brands available in Canada are listed. As of July 1992, generic equivalents exist for all antibiotics listed except Amoxil 125 and 250 mg chewable tablets, Eryc 125 mg capsules, Erybid 500 mg tablets, Dalacin C 150 mg capsules and Flagyl 500 mg capsules.

² Dosage regimens given assume 150-pound adult with normal renal and hepatic function. Actual dosages vary with severity of infection.

³ The spectrum indicated is specific for odontogenic pathogens. Antimicrobials may be effective against other bacterial types.

⁴ Price per tablet, capsule or 5 mL does not include pharmacy dispensing fee, is given for the generic equivalent where available, and may vary slightly between pharmacies.

⁵ Other erythromycin oral formulations exist: estolate (Ilosone), ethylsuccinate (EES), and stearate (Erythrocin) salts.

contraceptive, and to use supplementary contraception during the entire cycle in which the penicillin

is taken.¹¹ Concurrent treatment with a bacteriostatic agent (e.g. erythromycin, tetracycline) and a

penicillin may impair the efficacy of penicillin therapy and therefore is not recommended. Bacterial re-

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sistance to penicillins by the predominant organisms presently involved in odontogenic infections is not a major clinical problem.^{3,5,6}

Penicillin V remains the drug of choice for the initial empirical treatment of most mild to moderate odontogenic infections.^{1,4,5} The antibacterial spectrum of penicillin V, while modest, is appropriate for odontogenic infections and includes anaerobic gram-positives (actinomyces, bifidobacterium, peptostreptococcus, peptococcus species), anaerobic gram-negatives (bacteroides sp., excluding *B. fragilis*, fusobacterium and veillonella), and susceptible streptococci including viridans group streptococci, a common cause of bacterial endocarditis. There is little reason to use oral penicillin G for acute odontogenic infections, as gastric acid inactivates penicillin G with only 30 per cent of an oral dose absorbed.³ Penicillin V is more stable in an acidic environment than penicillin G, and an equivalent oral dose leads to plasma levels two to five times higher than those obtained with penicillin G.³

Amoxicillin has little indication in the treatment of routine odontogenic infections. Compared with penicillin V, amoxicillin demonstrates slightly less activity against gram-positive cocci but increased efficacy against aerobic gram-negative cocci and bacilli, bacteria not commonly involved in odontogenic infections.⁵ Amoxicillin is, however, the drug of choice for endocarditis prophylaxis, as it results in higher serum levels than penicillin V.¹² Penicillinase-resistant penicillins such as cloxacillin and flucloxacillin (isoxazolyl penicillins) are indicated for staphylococcal infections, as many staphylococci produce penicillinase, making them resistant to penicillin V and amoxicillin.

Oral first- (e.g. cephalexin) and second- (cefaclor, cefuroxime, cefixime) generation cephalosporins are not first-line drugs for most types of dental infections, as their broader spectrums do not provide any advantage over penicillin V against principal odontogenic pathogens.¹ In summary, due to its excellent activity against major

pathogens in odontogenic infections, safety, and low cost, penicillin V is usually considered first-line therapy.

Erythromycin

Erythromycin is one of the safest antimicrobials marketed today. This agent's adequate activity against the organisms typically involved in odontogenic infections makes it a common choice in patients allergic to penicillins. Although its activity against odontogenic pathogens is not as good as penicillin V's, it is clinically effective. Erythromycin base is inconsistently absorbed following oral administration because of its poor water solubility and rapid inactivation by gastric acid. Therefore, taking erythromycin base one hour before or two hours after meals will maximize its absorption. Various esters of erythromycin (estolate, ethylsuccinate), which increase the bioavailability of free erythromycin while decreasing gastrointestinal upset, are marketed. Enteric-coated erythromycin base, which reduces gastrointestinal irritation, is also available. Newer macrolide antimicrobials such as clarithromycin are recent additions to the therapeutic armamentarium. Clarithromycin offers improved pharmacokinetics when compared with erythromycin. However, no spectral improvement against the principal odontogenic pathogens is demonstrated.

Erythromycin diffuses well into most body tissues and persists in tissues longer than in blood. Appreciable serum levels are maintained for six hours. Erythromycin is concentrated in the liver and is excreted primarily in bile and feces. Epigastric distress occurs frequently. Reversible cholestatic hepatitis (fever, jaundice and occasionally eosinophilia and rash) occurs rarely, and then almost always in adults with the estolate preparation of erythromycin.³

Erythromycin may produce interactions with other medications by interfering with hepatic metabolism through the cytochrome P-450 enzyme system. Concurrent erythromycin and theophylline administration may increase theophylline serum levels, leading to toxic accu-

mulation. Erythromycin may also increase the effects and toxicity of oral anticoagulants (such as warfarin), carbamazepine, methylprednisolone and digoxin.¹¹ As the efficacy of the oral contraceptive may be compromised, precautions similar to those outlined for penicillins are required.

Tetracyclines

Tetracycline, although of limited use in general dentistry, may be indicated when culture and sensitivity tests determine pathogen susceptibility and other antibiotics are inappropriate. When tetracycline was originally marketed in 1953, it was a broad-spectrum antimicrobial that was active against both gram-positive and gram-negative aerobic and anaerobic bacteria, spirochetes, mycoplasmas, rickettsia, chlamydia and some protozoa. Today, its broad spectrum activity has been markedly negated due to widespread resistance. Newer versions of tetracycline such as minocycline and doxycycline offer advantages in their pharmacokinetics (allowing less frequent dosing and greater tissue penetration), as well as greater *in vitro* activity against selected pathogens. However, in clinical dentistry these agents offer no spectral advantages over tetracycline alone.

Tetracycline is approximately 70 per cent absorbed following oral ingestion, while minocycline and doxycycline are almost completely absorbed. All tetracyclines demonstrate peak serum concentrations one to three hours after dosing, and diffuse readily into body fluids. Tetracycline absorption is impaired by food, especially milk and milk products, as well as by aluminum-, magnesium- and calcium-containing antacids. The cations in these substances chelate with tetracycline, preventing gastrointestinal absorption. Minocycline and doxycycline chelate calcium poorly, and food does not interfere with their absorption. However, like tetracycline, they do chelate with iron to form insoluble complexes and therefore should not be taken with iron supplements.

Tetracyclines are removed from the blood by the liver, pass into the intestine via the bile, and undergo





enterohepatic cycling. Excretion occurs primarily via glomerular filtration in the kidney, although there is some fecal excretion.

Gastrointestinal disturbances (e.g. diarrhea) are a common, untoward effect of oral tetracycline ingestion. Hypersensitivity reactions such as skin rash and drug fever can also occur. Infrequently, tetracyclines produce a photosensitive skin rash (greatest with doxycycline), which is induced by exposure to sunlight. Infants and children 13 years of age and under receiving tetracycline therapy may develop yellow-brown discolorations of their teeth and suffer depressed bone growth as a result of tetracycline-calcium-orthophosphate complex deposition.³ Tetracycline therapy during pregnancy incurs similar results in offspring. Reversible vestibular toxicity (vertigo, dizziness, ataxia, tinnitus) commonly occurs with minocycline therapy, limiting its clinical usefulness. Superinfection by strains of resistant bacteria and yeasts is a significant problem that can result in staphylococcal enterocolitis, intestinal and vaginal candidiasis and pseudomembranous colitis. Tetracyclines may impair the efficacy of oral contraceptives, and precautions similar to those used with penicillins are required. An acidic environment is required to dissolve tetracycline (a prerequisite of absorption). Therefore, cimetidine and other H₂ receptor antagonists will indirectly interfere with tetracycline absorption. Tetracyclines, while possessing good *in vitro* activity against commonly-found pathogens in odontogenic infections, cause a high incidence of side effects such as gastrointestinal disturbances and superinfection, and cannot be used in children under 13 years of age. These factors account for the limited use of tetracycline in clinical dentistry. Newer agents such as minocycline or doxycycline offer limited advantages in the treatment of odontogenic infections versus tetracycline alone.

Clindamycin

Clindamycin is very effective against facultative gram-positive organisms such as staphylococci

and streptococci, and also against many anaerobic bacteria, including bacteroides fragilis and penicillin-resistant strains of bacteroides. Oral absorption of clindamycin is approximately 90 per cent, and is slightly delayed, but not decreased, by ingestion with food. Clindamycin is widely distributed in body fluids. Most of the drug is metabolized to the inactive sulfoxide form, which is then excreted in the urine and the bile. Although it is very active against the pathogens involved in odontogenic infections, clindamycin suffers from a long history of gastrointestinal disturbances. Diarrhea frequently occurs with the use of clindamycin (approximately 20 per cent of treatment courses), and may be accompanied in a few patients (approximately one to two per cent of treatment courses) by abdominal pain, fever, and mucous and blood in the stools (commonly known as pseudomembranous colitis). At one time, this condition was often fatal, but now the causative organism is known to be clostridium difficile, and can be treated with metronidazole (or vancomycin if necessary). Its high propensity for side effects, especially in the gastrointestinal tract, limits the use of clindamycin in general dentistry to odontogenic infections of a severe and potentially life-threatening nature. It is important to appreciate that all of the currently-described antimicrobials used in the treatment of odontogenic infections, including metronidazole, can produce pseudomembranous colitis. Compared to clindamycin, they do so very rarely, however.

Metronidazole

Metronidazole, although ineffective against aerobic bacteria (i.e. streptococci), is highly active against most anaerobes, including *B. fragilis* and penicillin-resistant anaerobic gram-negative bacilli. Moderate activity against anaerobic gram-positive cocci may limit the use of metronidazole in some infections. Generally, however, metronidazole is effective in treating chronic infections and may be used in combination with penicillin V (excellent streptococcal coverage) for more serious odontogenic

infections. Metronidazole diffuses very well into most body tissues and fluids. It is well tolerated by patients, and the development of resistance to this agent is rare.³ Metronidazole is rapidly and almost completely absorbed following oral administration. Food does not affect the absorption of metronidazole, but peak serum levels may be markedly delayed. Metronidazole is highly metabolized by the liver (60 to 80 per cent of dose) and the metabolites produced, as well as unmetabolized drug, are excreted primarily in the urine.³

Metronidazole is a safe agent in humans, although it may be both carcinogenic and mutagenic in animals. Neither of these effects has been demonstrated in humans, although this agent should be avoided in pregnancy. Untoward effects of metronidazole may include metallic taste and gastrointestinal disturbances. Patients should be counselled concerning the innocuous darkening of urine and against ingesting alcohol, as a disulfiram reaction (nausea, vomiting, abdominal cramps) often occurs. They should also be warned about the possible inactivation of oral contraceptive. Peripheral neuropathies (numbness, tingling) may occur with prolonged therapy (weeks). Metronidazole inhibits the metabolism of warfarin and other coumarin-type anticoagulants. Barbituates such as phenobarbital may enhance hepatic clearance of metronidazole, and therefore decrease its serum concentration. Metronidazole's excellent anaerobic activity, particularly against gram-negative bacilli, and its low order of toxicity makes it an effective agent for the treatment of some odontogenic infections, especially those of a chronic nature.

Conclusions

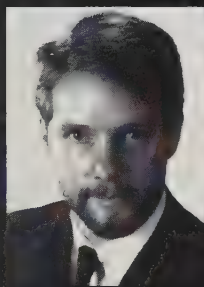
The majority of odontogenic infections are mixed infections consisting of obligate and facultative anaerobes, which appear to work in a complimentary way to induce infection. The majority of odontogenic infections are caused by resident oral microflora that have been allowed to invade tissues and cause disease. Penicillin V, although it has been marketed for close to 50



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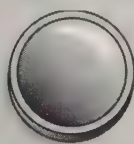
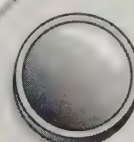
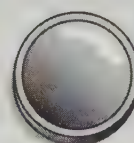
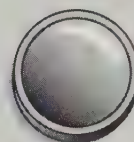
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years, is still a very effective agent for the treatment of odontogenic infections. This agent's safety and proven clinical efficacy, together with its low cost, make it first-line therapy. Erythromycin with its reliable antibacterial activity, should be considered second-line therapy in patients allergic to penicillins. ■

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References

1. Newman, M.G., Kornman, K.S. *Antibiotic/antimicrobial use in dental practice*. Chicago, Quintessence Publishing Co., Inc., 1990.
2. Davis, B.D., Dulbecco, R., Eisen, H.N. et al. *Microbiology*, ed. 4, New York, J.B. Lippincott Company, 1990.
3. Mandell, G.L., Douglas, R.G. and Bennett, J.E. *Principles and practice of infectious diseases*, ed. 3, New York, Churchill Livingstone Inc., 1990.
4. Zambito, R.F. and Cleri, D.J. *Immunology and infectious diseases of the mouth, head, and neck*. Mosby Year Book, Inc., 1991.
5. Topazian, R.G. and Goldberg, M.H. *Oral and maxillofacial infections*, ed. 2. Philadelphia, W.B. Saunders Co., 1987.
6. Heimdahl, A. and Nord, C.E. Treatment of orofacial infections of odontogenic origin. *Scand J Infect Dis Suppl* 46:101-105, 1985.
7. Loesche, W.J. Role of streptococcus mutans in human dental decay. *Microbiol Rev* 50:353-380, 1986.
8. Moore, W.E.C., Holdeman, L.V., Smibert, R.M. et al. Bacteriology of experimental gingivitis in young adult humans. *Infect Immun* 38:651-667, 1982.

9. Williams, B.L., McCann, G.F. and Schoenknecht, F.D. Bacteriology of dental abscesses of endodontic origin. *J Clin Microbiol* 18:770-774, 1983.
10. Cole, M., Kening, M.D. and Hewitt, V.A. Metabolism of penicillins to penicillinoic acid and 6-aminopenicillanic acid in man and its significance in assessing penicillin absorption. *Antimicrob Agents Chemother* 3:463-468, 1973.
11. Hansten, P.D. and Horn, J.R. *Drug Interactions*, ed. 6, Philadelphia, Lea and Febiger, 1989.
12. Williams, P.M. and Epstein, J.B. American heart association updates recommendations for prevention of infective endocarditis. *J Can Dent Assoc* 57(6):494-495, 1991.



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VICTORIA - Well established downtown location across from the "Eaton Centre". Top floor in high-rise professional building. Three fully equipped operatories with room to expand to five. Beautifully appointed office and excellent staff. Many patients are government employees - recession proof practice.

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NORTH VANCOUVER - Ideal starter practice for general practitioner. Four fully equipped operatories. Busy Lonsdale location. 1,700 sq. ft. in a professional building. Plenty of room and opportunity for expansion. Established recall. Reduced to \$95,000.

DELTA - General practice over 3,000 active charts. 1,300 sq. ft., five operatories, hygienist. Main floor medical/dental building in a developing area of Delta. \$380,000. (shares). Estimated gross billings \$600,000+. Retiring dentist prefers slow transition period.

NANAIMO - General Practice. Busy street location with good exposure. 1000 sq. ft., low overheads. Excellent opportunity to expand office hours and increase income. Price \$65,000.

VANCOUVER - Southside, established practice. Store front location on busy major street. Four fully equipped operatories and pan. Annual gross \$663,000.

GULF ISLANDS - Established family practice located in medical centre. Daily ferry service from Vancouver and Victoria. Ideal satellite practice that could be developed into a small full time practice.

ALBERTA

NORTHERN ALBERTA - Probably the largest grossing 3 operatory general dentistry practice in Alberta. Call for confidential details.

CALGARY (NORTH WEST) - Productive, well established general practice. 2 operatories with pan, recently renovated. 1991 gross revenue \$331,000, operating income \$129,000. Price: \$175,000. Reduced: \$160,000. Reduced: \$110,000.

EDMONTON - General dentistry practice located in downtown professional building. New leaseholds. Dentist retiring. Price: \$325,000.

ALBERTA

CALGARY - General dentistry clinic in retail strip plaza. 1,300 sq. ft. 3 operatories, panorex computerized office, new leasehold improvement. Gross revenue \$425,000, operating income \$235,000. Price: \$280,000.

CALGARY - Prosthodontic practice in downtown professional building. 1,100 sq. ft., four operatories. 1992 Gross Revenue - \$400,000. Price: \$190,000.

EDMONTON - Riverbend area clinic with 1 equipped operatory. Ideal satellite practice. Gross revenue \$164,000. Price: \$99,000.

ONTARIO

DOWNTOWN TORONTO - Just reduced to sell. Practice is located in large prominent downtown mall. Approximately 900 active patients. One operatory equipped with room for 3 more which are plumbed and wired.

TORONTO - Danforth Avenue. Walking distance to subway. Busy, fully equipped 3 operatories and hygiene room, storefront practice. Established in 1977 with over 1,600 patients and still growing. Favorable lease terms and room for expansion. Owner willing to stay on and help with transition.

MISSISSAUGA - Dental office located in very busy medical dental building close to Credit Valley Hospital. Ideal situation to relocate into. Large spacious 3 operatory practice with one already equipped.

PETERBOROUGH - Established practice of over 20 years now available. 800 patients in 1,200 square feet. This community is growing and offers an excellent lifestyle for a dentist wishing to relocate.

KINGSTON - Well established 2 operatory family practice in large medical/dental building. Over 1,000 active patients. Doctor retiring but will assist in takeover.

TORONTO (downtown) - Percentage of large dental office available. 11 operatories soon to expand to 18 - Real Estate involved. Active Hygiene Program in place. Fully computerized. Practice has been going for over 50 years.

WESTON - 3 operatories equipped with 1 additional plumbed and wired. Well established practice. Referring Medical Doctors in building in strip plaza with public transportation and parking at busy intersection. Owner retiring but will assist in takeover.

HAMILTON - Located in a professional building in core area. Doctor retiring. Two operatories fully equipped with a third plumbed, private office. Left handed equipment but can be readily converted. 850 sq. ft. Premises lease now negotiable.

TORONTO - Bathurst/Eglinton area. Orthodontist retiring from well established practice will assist in takeover. 600 sq. feet with two operatories and large lab.

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NATIONAL SCOPE.

ONTARIO

MISSISSAUGA - Established partnership available in large office commercial complex near Mississauga City Centre. 5 complete operatories and 3 ortho chairs in 2,100 square feet. Beautifully designed with newer equipment and computerized. Presently 60 new patients per month and growing at 15% per year. Opportunity here, must be seen.

OSHAWA - Well established 2 operator practice with approximately 600 patients for sale in well populated area of Oshawa. Retiring Doctor will assist in takeover. Building also available in purchase. Public transportation and parking. Room for expansion.

WHITE RIVER - Satellite practice available with 600 active patients. Located in single level medical/dental centre with ample parking. Three fully equipped operatories with most of the equipment owned by the town.

TORONTO - Yonge/Davisville - 2 operator dental office for rent in prime area of Toronto. Turn-key operation available immediately.

SAULT STE MARIE - Computerized 5 operator. Well established practice in mall location in east section of town. Well established mall with good anchor stores, ample parking and public transportation. 1,800 active patients and growing.

TORONTO (Bay/Bloor area) - 2 operator well established practice in concourse to subway area. 700 active patients on 6 month recall. Owner will assist in takeover prior to relocating to U.S.A.

SUDBURY AREA - Two operator practice in medical/dental centre, excellent net income with very low expenses, ample free parking, medical reason necessitates sale or associate potential for one year.

NORTH EAST - 40 minutes from Toronto, 3 operator practice with room for expansion. Practice computerized with panoramic unit. Practice established for over 18 years with 1,800 patients. Excellent staff and working conditions.

TORONTO - A large oral surgery office located close to Toronto. High quality practice with a healthy number of referrals. 2 operatories and computerized. Excellent staff will remain. Owner moving to private industry.

TORONTO - Well established, 2 operator practice in prominent Medical/Dental building on subway line. 1,100 active patients. Doctor retiring but will assist in takeover. Excellent staff.

TORONTO (Northwest) - Excellent progressive practice located in a professional building with favourable new 5 + 5 lease. Four operatories and 1 plumbed. 1991 gross over \$570,000 with good potential for growth.

OTTAWA (outskirts) - Terrific opportunity to buy into a very busy 4 operator practice. Excellent gross income in young growing area. Current doctor is too busy and requires dedicated individual to take over some of existing patients and new patients.

ONTARIO

EASTERN ONTARIO - Growing community - 2 hr. drive to Toronto, well established family practice located in professional building, 3 complete operatories, gross in excess of \$250,000 during last fiscal year, over 1,100 active patients, owner will assist in takeover on part-time basis.

OTTAWA (West End) - Wonderful opportunity to own a share of the building plus practice with over 1000 patients. Doctor is retiring. Two operatories. Great potential.

KITCHENER - Storefront, 5 operator practice with 2 presently equipped. 4 year old practice with 1,200 + patients and growing. Plenty of parking and public transportation. Owner will assist in takeover.

TORONTO (Don Mills / Sheppard) - Mall location in densely populated area, excellent new patient flow, 1000 sq. ft. office, plumbed and wired for 5 operatories, 2 fully equipped, presently grossing \$40,000 per month.

SAULT ST. MARIE - New facility available in downtown area. 3 operatories with additional one plumbed and wired in 1,440 square feet. Parking and transportation. Available immediately.

HORNEPAYNE - Satellite practice with 800 active patients located in town centre with ample parking. Three operatories with most of the equipment owned by the town.

OTTAWA - Busy practice in Ottawa's West end. Practitioner currently doing mainly crown and bridge - also performing endo, perio, ortho, major and minor restorative. Four operatories, hygienist and 1 associate.

NORTH BAY - High profile - high exposure - highly lucrative practice. Combination sale of practice and real estate. Practice \$125,000 - Real Estate \$150,000 - Gross income \$250,000 approximately for 1991 fiscal year.

TORONTO - Yonge/Eglinton. Prime storefront. Well decorated with 6 equipped operatories - 1100 active patients in computerized practice. Well priced asking - \$210,000.

25 MILES NORTH OF TORONTO - Town of 15,000 population. Three operatories with room for expansion - c/w 1,500 patient charts. Full hygiene with excellent recall system. Building shared with 2 busy physicians. Main Street location with ample parking.

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office. Present associate leaving after three years. Currently grossing \$300,000, busy location, general dentistry in residential area. Solo practice with associate. Buy-in potential for the right person. Phone (403) 281-4266 or (403) 256-4265.

(02/04)

ALBERTA: Great opportunity for an orthodontic professional in a thriving community in West Central Alberta. If you enjoy many outdoor activities in and around the scenic Rocky Mountains, this is a career move that you would not want to miss. For further information phone Blaine at (403) 865-7673 or Fax: (403) 865-4866. (03/03)

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Call Viny Dolce at (407) 969-1001 (11/13)

BARBADOS-West Indies: Modern Dental Office for sale in Barbados. Present owner wants to retire for medical reasons. The office, located in Belleville (close to Bridgetown), is where most dentists and medical doctors have their offices. It is in a separate building and contains four treatment rooms with modern equipment, all necessary utility rooms, air conditioning and has good parking facilities. Telephone Dr. Stig Gefvert (809) 426-3065 or (809) 420-6559. (03/03)

AUSTRALIA CALLING

Established Dental Practice Package for Sale in Brisbane. Practice in Preventative, Crown and Bridge, Implants and Cosmetic Dentistry. Package includes: Modern Surgery, lab., Home and Car, Migration assistance given to buyer.

For further information write to:

**The Dental Practice,
P.O. Box 1310, Toowong 4066.
Or fax 7 870 5564.** (02/03)

Positions Available/Sought

BRITISH COLUMBIA: Associate dentist wanted for busy Vancouver practice. Preferably left handed. Please reply to CDA ACCESS Box 2565. (03/03)

BRITISH COLUMBIA - Kelowna: Associate wanted to share office space. Very generous split. Please reply to CDA ACCESS Box 2563.

(02/03)

BRITISH COLUMBIA - Abbotsford: Experienced registered dental hygienist required for dental practice in Abbotsford, B.C. (45 minutes from Vancouver). A great office environment, excellent working conditions. Call collect evenings (604) 853-1680, days (604) 852-2419, or fax (604) 853-3777. Dr. Alan Shearer, 33782 Marshall Road, Abbotsford, B.C. V2S 1L1. (02/03)

Vancouver Career Opportunity

Seeking recent graduate for thriving suburb practice. Successful candidate will be conscientious, personable, hard-working and prepared to interact as a team member. This is a two year associateship, leading to a partnership position. Prefer applicants with between 2-4 years general practice experience. Please send resume, along with a cover letter outlining your career goals, your conception of the "ideal" practice opportunity, and describe what experiences (good and not-so-good) you've had as an associate. Please discuss what treatment disciplines you enjoy, and which treatment disciplines you would refer to specialists.

Send resume with cover letter, in confidence, to:

**Suite 235
Windsor Square
1959-152nd Street
White Rock, B.C.
V4A 9E3** (03/03)

ALBERTA - Calgary: Associateship available in modern 2,500 sq. ft.

LOCUM LOCATORS

COLLECT (403) 791-7737.

(07/13)

SASKATCHEWAN - Regina: Seeking dental associate for modern office in large medical/dental facility. Good opportunity for the right person. For details call Dr. Ronald Katz, (306) 924-1494, or write to: 235B Albert Street N., Regina, Saskatchewan S4R 3C2. (08/03)

MANITOBA: Paid vacation to Hawaii for one week, for an associate willing to practice his or her skills where they are needed most. This is for a very busy modern computerized practice in Thompson, Manitoba. Willing to stay for a minimum of one year. Excellent remuneration. Present associate returning to graduate school. Please contact Judy at (204) 677-4555. (11/13)

ONTARIO - London: Excellent location 15 km northeast of London. Five-year-old building. Thorndale Lions Medical Centre is looking for a dentist to start his own practice. Family physician also located in the same building. For more information contact: Anthony Siroen, R.R.#3, Ilderton, Ont. N0M 2A0 (519) 461-1198. (01/03)

ONTARIO: General dentist seeks short-term associateship (3-6 months) leading to partnership or buy-out in Toronto or outlying area. Please reply to CDA ACCESS Box 2564. (03/03)

EDMONTON, ALBERTA, CANADA

Orthodontic group practice established in 1972 is seeking one or more well qualified, personable, motivated, caring orthodontists with unquestionable integrity to join group practice. One of the founding partners is wanting to retire this year, and another within two years. Our present group consists of five orthodontists, all practicing edgewise mechanics. We have four offices within the metropolitan city area which are all fully staffed with computerized financial and appointment control. Three of the offices are equipped for multiple doctors to be working simultaneously.

Edmonton is a city of close to 750,000 friendly people and boasts numerous cultural, recreational and sporting activities, including its own symphony, live theatre, National Hockey League franchise, Canadian professional football team (where Warren Moon learned to play quarterback), and a Triple A professional baseball franchise. We are located close to good hunting and fishing, as well as world class skiing in Banff and Jasper.

If this sounds like where you would like to practise and raise a family, please talk to us. We are prepared to offer a generous guaranteed salary for the right individual along with an option to either associate for a longer period or an opportunity to buy into the group. If this sounds too good to be true, it's because it is. You owe it to yourself to contact us by writing:

**Chairman, Empire Orthodontic Associates
#500 10080 Jasper Avenue
Edmonton, Alberta
T5J 1V9**

or by phoning Tuesday-Friday 8:00 - 5:00 M.S.T. (403) 421-1511.

PROSTHODONTICS FACULTY OF DENTISTRY UNIVERSITY OF TORONTO

The Faculty of Dentistry, University of Toronto, invites applications for a full-time tenure-stream position in the Department of Prosthodontics. Applicants must provide evidence of advanced training in the discipline, and be eligible for Fellowship Examinations in the Royal College of Dentists of Canada in Prosthodontics. Experience and ability in research and teaching are necessary, and additional experience in a related basic science (e.g. neuromuscular physiology, biomaterials) is desirable.

The successful candidate will be expected to participate in teaching, research and other scholarly activities related to the discipline. One day per week private practice privileges are permitted and encouraged. Rank and salary would be commensurate with the candidate's qualifications and scholastic accomplishments. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and/or permanent residents. The University of Toronto is an equal opportunity employer.

Application letters, accompanied by a detailed curriculum vitae and names and addresses of three references, should be sent by **March 31, 1993**, to:

**The Chair, Prosthodontics Search Committee
Dean's Office
Faculty of Dentistry
124 Edward Street
Toronto, Ontario
M5G 1G6**

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ONTARIO - NIAGARA PENINSULA Partnership(s) Available

Very busy and growing Niagara Region practice seeks one (or two) ambitious but caring individuals to share rewards of a successful practice. Capital cost of partnership repaid in six months gross. Serious enquires are invited to call **(416) 871-0556. (02/03)**

YUKON - Whitehorse: Assistant required immediately in very busy six-operator, preventative practice in downtown Whitehorse. Excellent salary and benefits. D.O.E. Must be certified or at least five years experience. Ideal opportunity for active outdoor person interested in adventure and a prosperous challenging career. Serious applicants please call Dianna at (403) 668-6707 and fax resume to (403) 668-5121. (01/03)

YUKON - Whitehorse: Hygienist (permanent or locum) required immediately in busy six-operator practice in community of 23,000. Experience preferred, but new graduates welcome. Salary is \$30 to \$35 per hour doe. We will provide relocation assistance and aid in locating accommodation. Whitehorse is a modern city located in the unspoilt north. It is the fastest growing city in Canada with numerous opportunities to become involved in the arts, sports and the outdoors. Please fax resume to (403) 668-5121 and call (403) 668-6707. (08/03)

YUKON - Whitehorse: Associate wanted. Full-time or locum needed in a very busy, bright, well-staffed, friendly, six-operator practice in booming downtown Whitehorse. Ideal opportunity for motivated, hard-working, cheerful individual who wants the best of both worlds - busy patient flow and the beautiful outdoors (skiing, hiking, camping, canoeing, etc.) Serious applicants please, fax resume (403) 668-5121, and call (403) 668-6707. (08/03)

DIRECTOR OF QUALITY ASSURANCE - DENTIST

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO

The governing body of the dental profession in the Province of Ontario is seeking a dentist for the recently created full-time position of a Director of Quality Assurance.

Reporting to the Registrar, the position will encompass the management of the College's mandatory continuing dental education and professional dental assessment programs as well as being responsible for the College's publications: Dispatch and the Proceedings.

In addition to experience in private practice, candidates should be able to demonstrate excellent verbal and written communication skills, public presentation skills, management skills, and continuing dental education experience. Preference will be given to a dentist with knowledge of quality assurance principles, a working knowledge of computer applications, and knowledge of the process of publication. French language skills, or a willingness to acquire these skills, will be an asset.

The College provides a collegial environment and would be compatible to those comfortable in a team environment.

Compensation includes an excellent benefit package.

The Royal College of Dental Surgeons of Ontario is an equal opportunity employer.

Please submit your written application and resume in confidence before April 23, 1993 to:

The Registrar
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5th Floor
6 Crescent Road
Toronto, Ontario
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CANADIAN DENTAL SERVICE PLANS INC. (CDSPI) INVITES APPLICATIONS FOR A POSITION ON ITS MANAGEMENT COMMITTEE

Qualifications:

- Must be a licensed dentist and a member of the CDA, actively involved in the delivery of dentistry, the administration of dentistry or the teaching of dentistry.
- Must have demonstrated the ability and willingness to work within organized dentistry. Past service with the CDA or one of the provincial dental organizations in an elected/appointed capacity would be an asset.
- Should currently be a participant in one or more of CDSPI's programs.
- Must be willing to make a long term commitment of no less than seven years of continuous service.
- Must have the ability and the willingness to participate in decision making and management by consensus and have good communication skills.
- Must have the flexibility and availability to accommodate the demands of the corporation so as to be available to arrange personal and professional schedules for all Management Committee functions. Management Committee normally meets at CDSPI headquarters in Toronto on average 30-35 times a year.
- Remuneration is commensurate with the marketplace and compares favourably with positions of similar responsibilities.

Duties: Reporting to the Board of Directors, this individual will work as a part of the Management Committee being responsible for the management of the corporation as set out in a detailed job description.

Starting Date: To commence a one-year apprenticeship period January 1, 1994; beginning regular term on January 1, 1995. Selection of a successful candidate is to take place at the September 1993 meeting of the CDSPI Board of Directors.

Please submit applications by May 15, 1993 in writing only along with a detailed resumé, to:

The Management Committee Selection Committee
c/o CDSPI
Suite 710, 100 Consilium Place
Scarborough, Ontario
M1H 3G8

All responses will be treated as confidential.

LE CDSPI EST À LA RECHERCHE DE CANDIDATS DESIREUX DE FAIRE PARTIE DE SON COMITÉ DE GESTION

Exigences

- Dentiste autorisé(e) à exercer et membre de l'ADC, activement engagé(e) dans l'exercice, l'administration ou l'enseignement de la profession.
- Capacité et volonté prouvées de travailler au sein d'un organisme de la profession. Une expérience concrète au sein de l'ADC ou d'une association provinciale — par élection ou nomination — serait un atout.
- Obligation de participation à au moins un des programmes du CDSPI.
- Désir de s'engager à long terme pour une période ininterrompue d'au moins sept ans.
- Capacité et désir de participer au processus décisionnel et à une gestion collective, et bon sens de la communication.
- Souplesse et volonté d'adaptation aux exigences de l'organisme, pour organiser sa vie personnelle et professionnelle de manière à être disponible pour toutes les fonctions du Comité de gestion. Ce dernier se réunit normalement 30-35 fois par année, au siège social du CDSPI à Toronto.

Rémunération : La rémunération, en fonction du marché, se compare favorablement à celle des postes comportant des responsabilités analogues.

Fonctions : Le candidat retenu relève du conseil d'administration et travaille au sein du Comité de gestion. Il ou elle sera chargé(e) de la gestion de l'organisme conformément à une description de poste détaillée.

Entrée en fonctions : Le ou la candidat(e) aura un an pour se familiariser avec ses fonctions, à compter du 1^{er} janvier 1994. Entrée en fonctions normale le 1^{er} janvier 1995. La sélection sera faite à la réunion du conseil d'administration du CDSPI de septembre 1993.

Veuillez faire parvenir votre candidature par écrit au plus tard le 15 mai 1993, accompagnée d'un curriculum vitae détaillé, à l'adresse suivante :

Comité de sélection du Comité de gestion
CDSPI
100 Consilium Place, bureau 710
Scarborough, Ontario
M1H 3G8

Discrétion assurée.

PROSTHODONTICS Faculty of Dentistry, University of Alberta

Applications are invited for a full-time, tenure track, academic position in the Department of Restorative Dentistry starting July 1, 1993 or later by arrangement.

Teaching duties may include undergraduate education primarily in fixed and removable prosthodontics with contributions to other areas including implantology, treatment planning and operative dentistry. Scholarly duties will include an active research program. The position requires graduate training in prosthodontics, experience in an educational institution, an active research interest as evidenced by a significant publication record in reputable journals and eligibility for licensure in the Province of Alberta.

Rank and salary are commensurate with education and experience at either the Assistant Professor (\$40,035 - \$57,003) or Associate Professor (\$49,423 - \$71,725) levels. Intramural private practice facilities are available. Applications including a full curriculum vitae and the names of three references should be sent no later than April 15, 1993, to:

Dr. G.R. Holland, Chairman
Department of Restorative Dentistry
University of Alberta
Edmonton, Alberta T6G 2N8

The University of Alberta is committed to the principle of equity in employment. The University encourages applications from aboriginal persons, disabled persons, members of visible minorities and women.

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ONTARIO: Panorex for sale. Planica P.M. 2002 CC. Excellent condition - \$15,000 or best offer. (416) 733-0060 ask for Linda. (03/03)

ONTARIO - Kitchener: Dental equipment for sale. One Belmont, two Dental-Eze chairs with light, cuspidor and hand control units. Three Siemens Heliodont 70 X-ray units (models 1341). Doctors and assistant stools. Two Mardan

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April/Avril 1993

April 4-7: Conference: Focus on Children - Protecting our Future, jointly sponsored by the Canadian Organization for Victim Assistance and Child Find Alberta, being held at the Calgary Convention Centre. For details, call: (403) 239-2920.

April 15-18: 5th International Congress on Preprosthetic Surgery in Vienna, Austria. For information, contact: G. Watzek, Congress President, Interconvention Austria Center Vienna, A-1450, Vienna, Austria.

April 16-17: Southern Ontario Surgical Orthodontic Study Group will meet in Windsor. For details, contact: Dr. Jeff Berger. Tel: (519) 258-2632, or fax: (519) 258-2637.

April 19-23: 2ème congrès d'Odontostomatologie de Côte d'Ivoire à Abidjan. Pour informations, contacter: Comité d'organisation, Dr. Adiko Eyholland F., 22 BP 512 Abidjan 22.

April 20-25: The American Academy of Cosmetic Dentistry Ninth Annual Scientific Session at the Doral Country Club, in Miami, Florida. For information, call: (800) 543-9220 or (608) 238-2300.

April 21-22: 10th International Oral Implant Symposium will be held at the Pan Pacific Hotel in Kuala Lumpur, Malaysia. For more details, contact: AOIA Secretariat, 268 Orchard Road #05-07, Singapore 0923, Republic of Singapore. Tel: (65) 734-3162.

April 23-24: 28th Annual Meeting of the Carl O. Boucher Prosthodontic

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April 30: McGill University Class of '68 Reunion, will be held during the CDA Annual Meeting in Toronto, with dinner on April 30 and breakfast Saturday May 1. For more details, contact: Ilse Marotta (416) 735-7267.

April 30: International College of Dentists, Canadian Section, Annual Convocation and Meeting. For information, contact: Dr. W.M. Spence, 12A Yonge Blvd., Toronto, Ontario, M5M 3G5. Tel/Fax: (416) 487-2928.

May/Mai 1993

May 1: University of Toronto Class of 73 20th Reunion will be held in Toronto. For details, contact: Dr. Doug Johnston, tel: (416) 813-6008, or fax: (416) 813-6375.

May 15-19: 47th Annual Meeting of the American Academy of Oral Pathology will be held at the Holiday Inn by the Bay, Portland, Maine. For further information, contact: Leslie A. Davis, Executive Secretary, American Academy of Oral Pathology, 211 Woodstone Dr., Buffalo Grove, IL 60089. Tel: (708) 520-2559.

May 27-30: Alberta Dental Association/Academy of Periodontology Annual Scientific Meeting will be held at the Jasper Park Lodge, Jasper, Alberta. For details, contact: Dr. D.A. Scott, 1038 Dentistry - Pharmacy Centre, University of Alberta, Edmonton, Alberta.

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June 7-18: Pindborg Course in Oral Pathology, being held at the Danish Dental Association in Copenhagen. The course is aimed at oral surgeons but also periodontologists, and radiologists, and will be conducted in English. Deadline for registrations is April 1. Contact Anne Grethe Ingversen, Department of Oral Pathology, School of Dentistry, University of Copenhagen, 20, Norre Alle, DK-2200 Copenhagen N, Denmark.

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July 1-3: British Dental Association Annual Conference being held at the Bournemouth Conference Centre, in Bournemouth, England. For details, contact: British Dental Association, conference office, 64 Wimpole St., London, England, W1M 8AL.

July 5-7: Bermuda Dental Association Annual Dental Convention being held in Paget, Bermuda. For more information, contact: Dr. Robert E. Gibbons, "Erin", Southcourt Ave, Paget PG 06, Bermuda. Tel: (809) 236-4477, or fax: (809) 236-8380.

July 4-7: 84th Annual Conference, Sustaining Our Communities: Health for the Future, is being held at the Radisson Plaza Hotel, St. John's, Newfoundland by the Canadian Public Health Association. For more information, contact: Robert Burr, CPHA Director of Communications, 1565 Carling, Suite 400, Ottawa, Ont. K1Z 8R1. Tel: (613) 725-3769.

August/Août 1993

August 22-27: 7th World Congress on Pain, sponsored by the International Association for the Study of Pain, is being held in Paris, France. For more information, contact: International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA, 98105. Tel: (206) 547-6409.

September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact: WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

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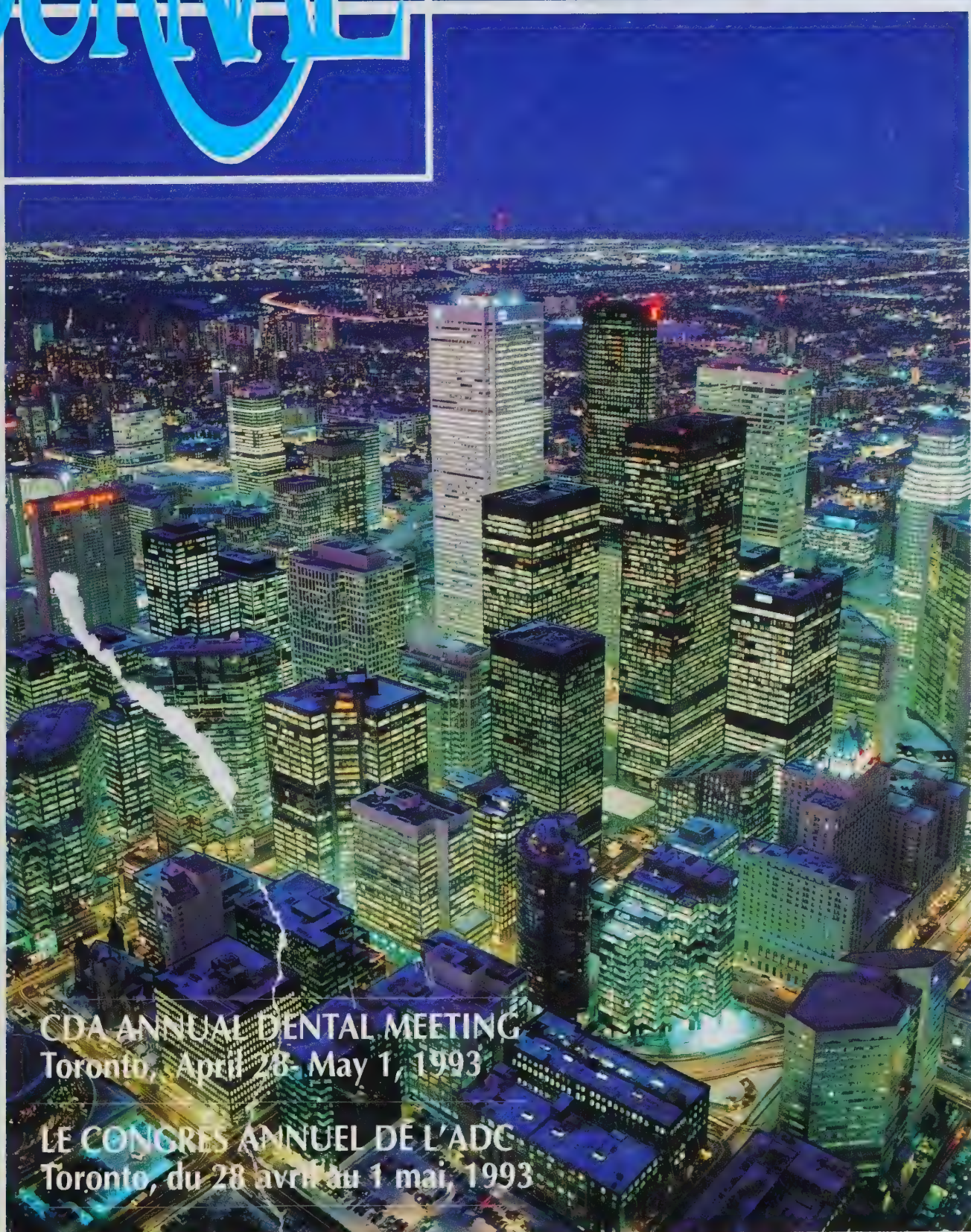
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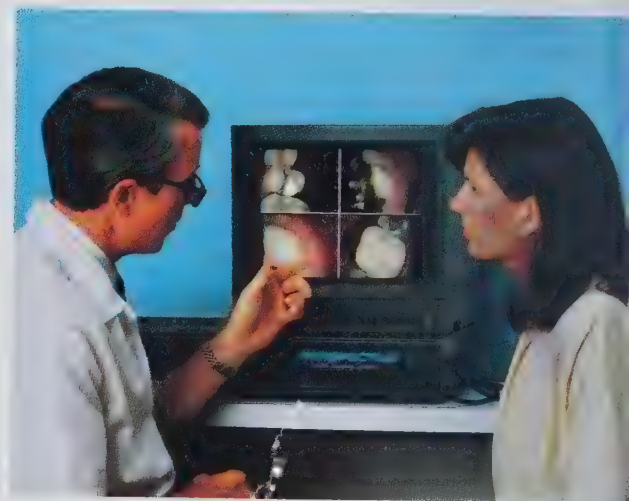
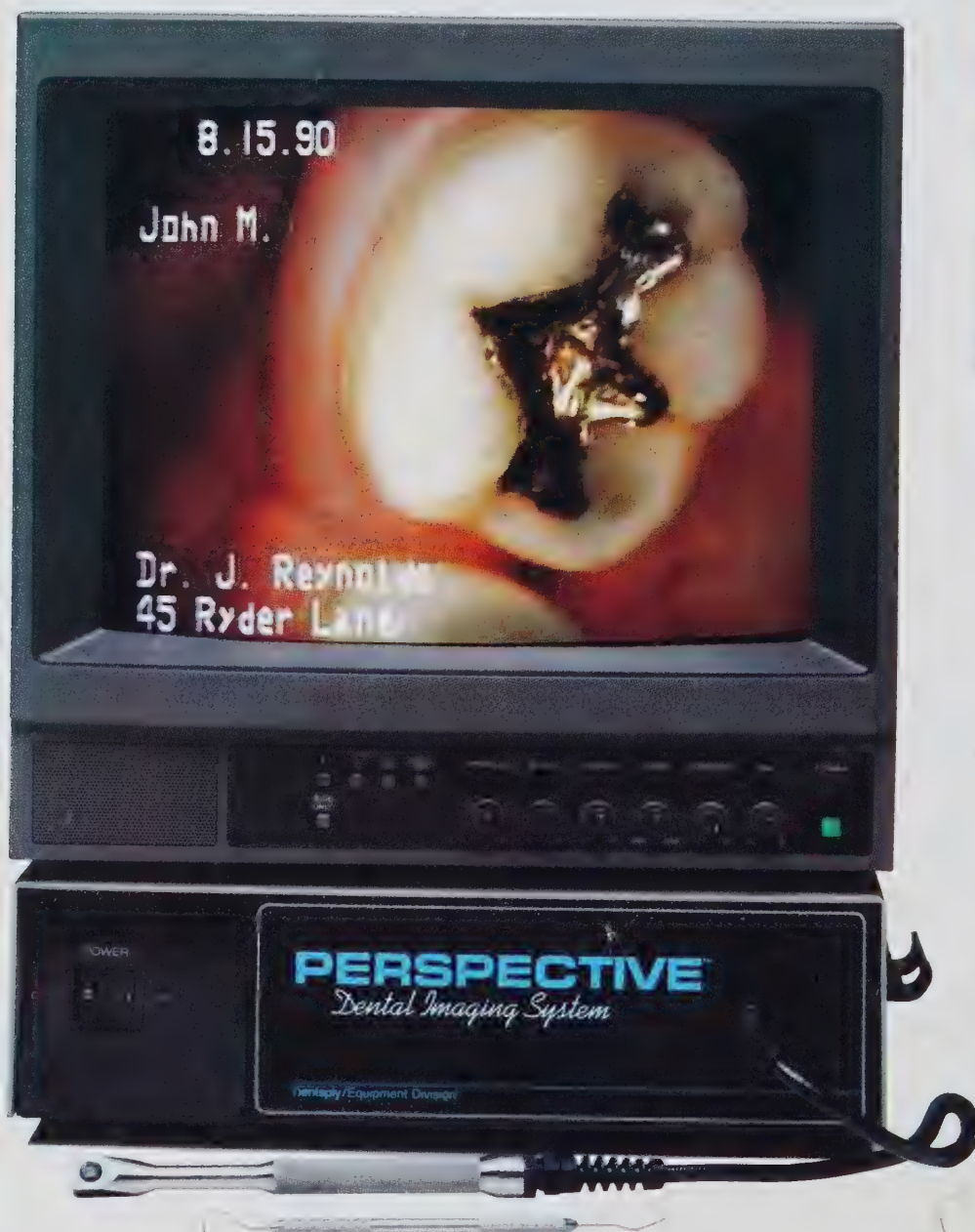
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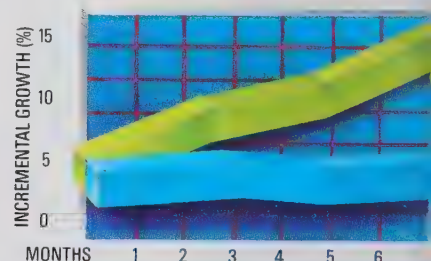
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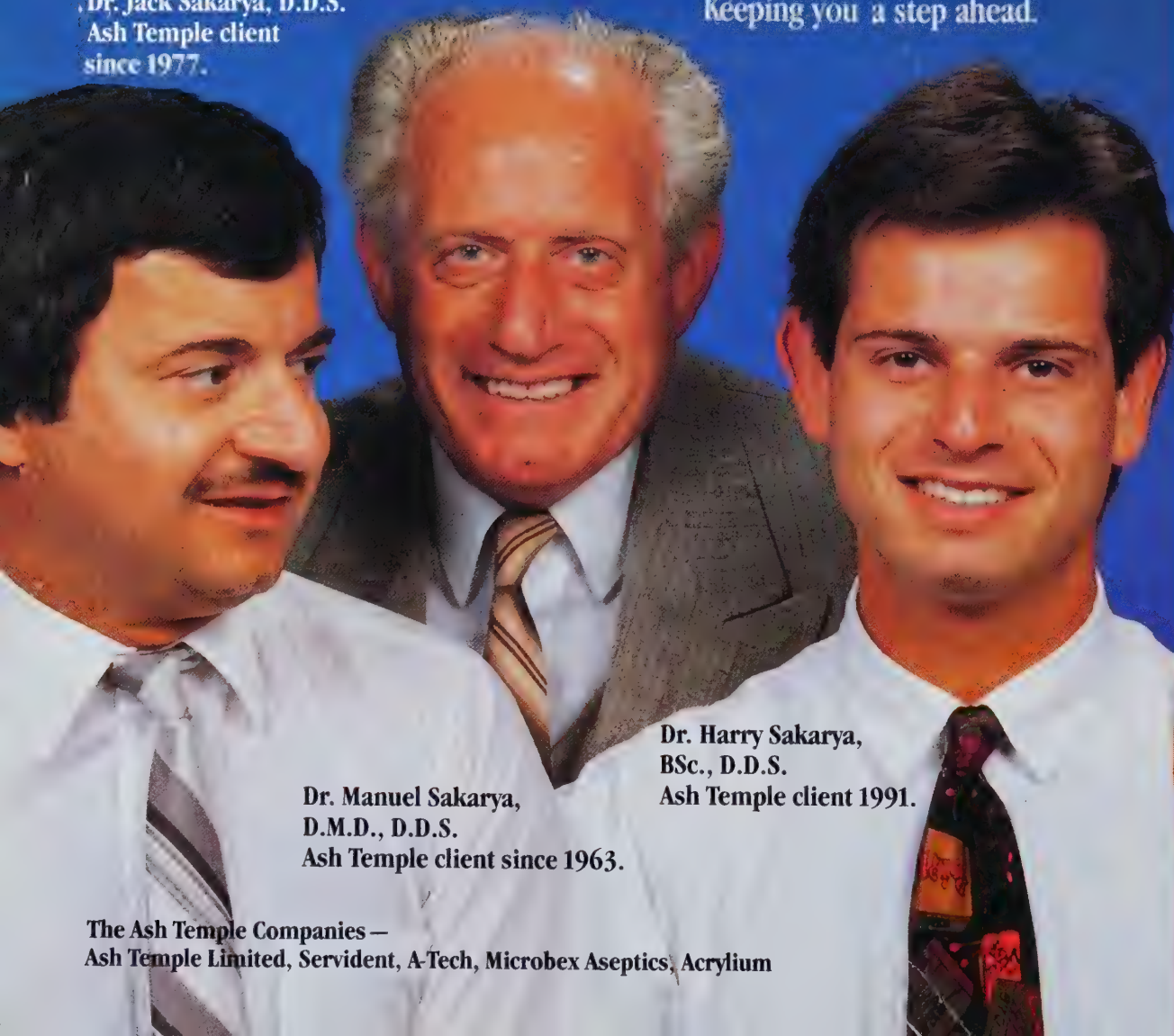
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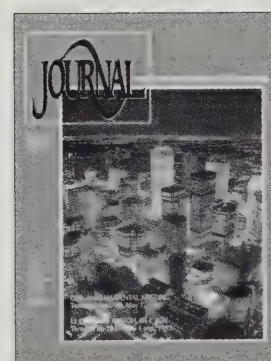
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Toronto, the site of the 1993 CDA
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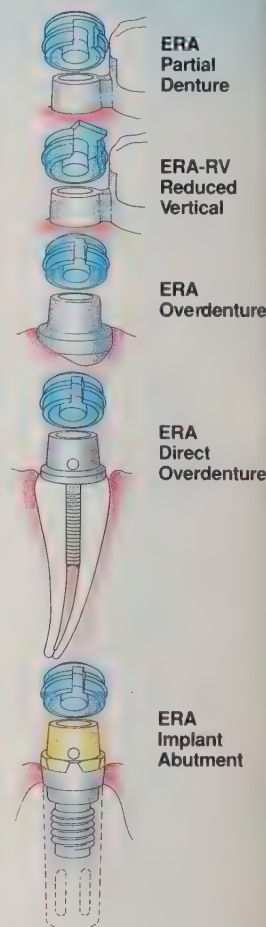
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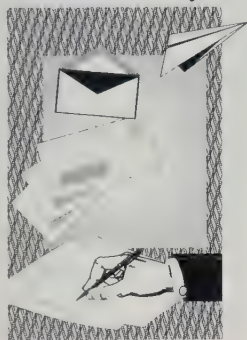


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LETTERS

LETTERS



The Need For Sterilization

Having developed the Canadian Dental Association's first infection control guidelines in the early 1980s, while a member of the Council for Hospital Services, this opinion is ventured on a "point of privilege" from semiretirement.

By attacking the policy of heat sterilization of all dental instruments (including dental handpieces) advocated by the Academy of General Dentistry, Dr. John Hardie ("AGD Policy Not Based On Science." *It's My Opinion, J Can Dent Assoc* 58(10):857, 1992) has placed himself squarely in the ranks of the Flat Earth Society.

The policy of recommending heat sterilization of all instruments including handpieces is not confined to AGD. Indeed, as Dr. Hardie states in his article, it is also advocated by the American Dental Association and the Centers for Disease Control (CDC) in Atlanta, and is mandated by law in the state of Washington.

What, then, would prompt a respected dental scientist to speak out constantly against this evolutionary step in dental asepsis? Could it be a desperate action to defend a long-standing position on the adequacy of chemical disinfection? It is certainly hoped that this is not the case.

True, there is no clear cut epidemiological thread linking the dental handpiece to clinical infection of any disease. The same can be said of periodontal scalers, rubber dam clamps, etc, etc. This same

argument is also used by the tobacco companies in denying a cancer link to cigarette smoking.

The work of Lewis et al does, without question, demonstrate biologically-active contaminant levels inside dental handpieces following patient use. Whether this material is capable of producing disease has not been proven to date, but it has not been disproven, either. We can quibble about portals of entry, critical, semicritical and noncritical instruments, virulence, dosage and other esoterica till the cows come home. However, if we are to maintain a responsible position as primary health care providers, we can not afford to espouse anything but the highest standards until such time as definitive evidence for the adequacy of a lesser standard is established. Currently, this is not the case in the dental handpiece sterilization controversy.

What happens in a busy practice, where a chairside assistant is often rushed in the performance of her duties? Handpiece washing and disinfection procedures, which may be adequate under ideal circumstances, may be less than 100 per cent meticulous at times, and there is an immediate and dramatic increase in the potential for disaster. In contrast, subjecting the handpiece to washing and heat treatment, even where the procedure deviates from ideal protocol, dramatically reduces the potential for the production of disease due to the susceptibility of vegetative (as opposed to spore form) biologic agents to elevated temperatures.

In the face of a concerned, frightened and often not well informed public, the explanation of scientific niceties does little to engender confidence in our profession. In the day-to-day practice of dentistry, the following should be kept in mind:

1. We have a moral and legal duty of care to our patients that demands the best standard we are capable of delivering.
2. A "probably adequate" modality of any kind does not have a defensible position in our list of proce-

dures in the 1990s.

3. The golden rule of "do unto others as you would have them do unto you" is not an outmoded approach to decision making.

Please, Dr. Hardie, don't knock AGD, ADA and CDC for taking the high road in handpiece infection control. We may not be entirely correct in our concerns, but we're certainly not wrong. Instead, devote some thought to changing your position in light of the above proposals. It could be an enlightening experience.

Walter H Sussel, BA, DDS
Member Dental Care Council,
Academy of General Dentistry
Chilliwack, B.C.

Dr. Hardie's Response

I recall Dr. Sussel's contributions to the development of CDA's guidelines on infection control. Indeed, his enthusiasm for the subject was a major factor in stimulating my interest. However, it is not an unusual circumstance for the student eventually to disagree with the mentor.

To illustrate his concept of infection control, Dr. Sussel employed the equation:

$$\frac{\text{Infectivity} = \text{Virulence of the microorganism} \times \text{dosage}}{\text{Resistance of the host}}$$

Accordingly, I find it unusual that Dr. Sussel has adopted a flip-pant disregard for the essential ingredients of a very useful formula. Perhaps he has inserted HIV into the equation and discovered an uncomfortable result. HIV has a low virulence, a low dose in peripheral blood, and it is not transmitted and may even be destroyed by saliva. In addition, the majority of dental patients are healthy, with substantial resistance to disease. The application of these facts to Dr. Sussel's equation demonstrates that, even without any infection control, the risk of a dentally-transmitted HIV infection is remarkably low. Dr. Sussel believes that such a risk is not good enough. However, in a previous article Dr. Sussel stated that infection in a dental office is

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limited to "control," since its elimination "is only a theoretical goal."¹ I submit to him that the unique microbiologic characteristics of HIV inherently create such a "control," and that further interventions in an attempt to reach a "theoretical goal" are needless redundancies.

In their latest studies, Lewis et al² failed to use handpieces in an acceptable manner, failed to disinfect them, failed to state that the polymerase chain reaction (PCR) test does not assay infectivity, and even failed to subject test handpieces to heat sterilization. Not one of Lewis' experiments has attempted to determine the pathogenicity of any blood borne viruses recovered from handpieces. Why, then, does Dr. Sussel believe that Lewis "does, without question, demonstrate biologically active contaminant levels inside dental handpieces, following patient use"?

According to Dr. Sussel, an added benefit of heat sterilization is the destruction of common intraoral vegetative bacteria – the normal oral flora. Dr. Sussel will recall his statement: "Fortunately, the majority of oral infections are caused by endogenous organisms or so-called normal flora, the resultant infections being more a factor of host resistance than the pathogenicity of the organism."¹ If Dr. Sussel still believes the above, he surely must appreciate that a heat-sterilized handpiece – which has no influence on host resistance – has no effect on reducing infection by endogenous, low-virulent vegetative bacteria.

Dr. Sussel implies that handpiece disinfection is being promoted because it is faster than heat sterilization. On the contrary, a proper cleansing and disinfection will take 20 to 25 minutes. When performed in this manner, a clinical study of 20 handpieces failed to reveal any difference in the microbiologic contents of the disinfected as opposed to the sterilized controls.³

Dr. Sussel is correct on one point, the public is "not well informed." There are many reasons why this has occurred. One of them, I believe, is the mixed message received by our patients. Why, they must wonder, if HIV

infection is so difficult to acquire in dental offices, do dentists adopt precautions that emphasize the risks? It is a paradox that our good intentions have fostered concern rather than diminished it. Surely, after a decade of AIDS, we should be prepared to accept that the condition is one which is contagious almost exclusively through behavior, and that such behavior does not include dental therapy. In their attempts to achieve an impossible goal, Dr. Sussel and his colleagues will continue to impose progressively severe restrictions on the profession. It is time for them to accept the reality of AIDS, and the practicality of infection control. If they don't, membership in the dental division of the Flat Earth Society awaits them.

Dr. John Hardie, BDS, M.Sc.,
FRCD(C)

Head, Department of Dentistry,
Vancouver General Hospital

References

1. Sussel, W.H., Mathias, R.G. Infection Control; An Ongoing Concern. (Opinion) *J Can Dent Assoc* 49(8):509, 1983.
2. Lewis, D.L., Arens, M., and Appelton, S.S. Cross-contamination potential with dental equipment. *The Lancet* 340:1252-1244, 1992.
3. Mills, S., Kuehne, J., and Bradley, D. Microbial Contamination of High-Speed Handpiece Turbines. *J of Dent Res* (IADR Abstracts):579, 1992.

Northern Dentistry

Having spent a great deal of time in the Keewatin district of the Northwest Territories, I am familiar with the oral health needs of the Inuit and the state of current oral health activities. I would like to comment on the issues raised in the February issue of the *CDA Journal*.

It is interesting to note that both Rea, Thompson, Moffatt et al and Bedford and Davey raise the same issue – namely, that there is a lack of true community-based oral health promotion and disease prevention in the North. Although the knowledge of what needs to be done to affect a change in the oral health status of the aboriginal peoples of Canada exists, the current structure and funding of oral health care favors the provision of clinical restorative care, leaving little in-

centive for community-based oral health disease prevention and education endeavors.

Coupled with the preference of regional health boards for private dentistry over institutions with the technical ability to provide dental public health activities, little more will be accomplished beyond that which dental therapists already provide. Only a concerted effort between the private, public and community sectors to integrate socially-appropriate oral health promotion/preventive services within general health education will result in improved oral health status.

Secondly, while anecdotal accounts of life in the North have some general interest value, this issue of the *Journal* would have been better served by scientific articles that built on the points raised in the aforementioned articles.

Gerald S. Uswak, DMD, MPH
Chapel Hill, North Carolina.

(**Editor's note:** these are the first articles on northern dentistry received by the *Journal* in five years. We invite interested authors to submit manuscripts for a future publication.)

Editing Questioned

We read with dismay, and not a little annoyance, our response to the letter by Dr. Poyton, which appeared on page 104 of the February issue of the *Journal*. It is apparent that editing changes were made and these unfortunately resulted in distortions that are confusing to the readers. The most glaring error occurred when the capitalized terms Justification and Optimization were changed to "justification and optimism." These are specific terms used by the ICRP and the substitution of "optimism" does not make sense. At the end of the first paragraph "justify" was substituted for satisfy, again an inappropriate change.

Two minor changes were made which we feel were unnecessary. In our letter, the phrase "in the absence of clinical indications" was italicized. The italics were removed even though this is a pivotal point, and in our view deserved the stress. Finally, we paid our distinguished colleague Dr. Poyton a compliment in the opening line

and this was removed.

We recognize your responsibility to edit but we cannot help but feel that these changes were to say the least, unhelpful.

R.G. Stephens, DDS, M.Sc.
S.L. Kogon, DDS, M.Sc.
University of Western Ontario

(Editor's Note: We apologize to the authors for the spelling errors. The use of lower case letters and the nonuse of italics stem from the *Journal's* adherence to *The Canadian Press Stylebook*, which contains rules on the appropriate use of capital letters, etc., in newspapers and magazines.

Printed in U.S.A.

I recently received my CDA certificate and card attesting that I am a member of this Canadian organization, which I have been proud of for many years. Then I turned the card over, and found that it had been "Printed in U.S.A." Is there not a limit to how far free trade has to go.

S.R. Gelman, DDS.
Saskatoon, Sask.

CDA's Response

We investigated Dr. Gelmon's thought-provoking comment regarding our "made in the U.S.A." membership card. It appears that there isn't a company in Canada which can produce this type of card.

Crain and Drummond, the printer CDA employed to produce the cards and membership certificates, is a Canadian company. They have informed us that for every other product they produce, their sources are Canadian. They regret having to go outside the country to have our cards produced, but they have little choice given that CDA wanted plasticized paper.

If we had requested a plastic membership card, similar to a credit card, Crain and Drummond could have used a Canadian source. Unfortunately, plastic cards are approximately twice the price of plasticized paper cards.

Carol Anne St. Laurent
Manager, Membership Services

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	February 26, 1993	January 29, 1993	
Bond & Mortgage Fund	103.68972	101.13013	12.0%
Common Stock Fund	18.67545	17.94752	2.9%
Money Market Fund	63.42610	63.07971	6.5%
Balanced Fund	37.57778	36.73109	5.9%

G.I.C. Fund

Term	February 26, 1993	January 29, 1993
1 yr	6.15%	6.10%
2 yr	6.60%	6.60%
3 yr	7.00%	6.85%
4 yr	7.35%	7.15%
5 yr	7.60%	7.35%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

	February 26, 1993	January 29, 1993
	\$173,572,603.58	\$168,237,449.36

For further information:



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ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

May 6-8, 1993

Newfoundland Dental Association
Annual Convention
(709) 579-2362

May 16-21, 1993

Les journées dentaires
(514) 875-8511

May 21-22, 1993

New Brunswick Dental Society
(506) 452-8575

May 27-May 30, 1993

Alberta Dental Association
Convention
(403) 432-1012

June 24-27, 1993

Annual Convention
College of Dental Surgeons
of Saskatchewan
(306) 244-5072

May/Mai 1993

May 1: University of Toronto Class of '73 20th Reunion will be held in Toronto. For details, contact: Dr. Doug Johnston, tel: (416) 813-6008, or fax: (416) 813-6375.

May 15-19: 47th Annual Meeting of the American Academy of Oral Pathology will be held at the Holiday Inn by the Bay, Portland, Maine. For further information, contact: Leslie A. Davis, Executive Secretary, American Academy of Oral Pathology, 211 Woodstone Dr., Buffalo Grove, IL 60089. Tel: (708) 520-2559.

May 27-30: Alberta Dental Association/Academy of Periodontology Annual Scientific Meeting will be held at the Jasper Park Lodge, Jasper, Alberta. For details, contact: Dr. D.A. Scott, 1038 Dentistry - Pharmacy Centre, University of Alberta, Edmonton, Alberta.

July/Juillet 1993

July 1-3: British Dental Association Annual Conference being held at the Bournemouth Conference Centre in Bournemouth, England. For details, contact: British Dental Association, conference office, 64 Wimpole St., London, England, W1M 8AL.

July 5-7: Bermuda Dental Association Annual Dental Convention being held in Paget, Bermuda. For more information, contact: Dr. Robert E. Gibbons, "Erin," Southcourt Ave, Paget PG 06, Bermuda. Tel: (809) 236-4477, or fax: (809) 236-8380.

July 4-7: 84th Annual Conference, Sustaining Our Communities: Health for the Future, is being held at the Radisson Plaza Hotel, St. John's, Newfoundland by the Canadian Public Health Association. For more information, contact: Robert Burr, CPHA Director of Communications, 1565 Carling, Suite 400, Ottawa, Ontario, K1Z 8R1. Tel: (613) 725-3769.

August/Août 1993

August 22-27: 7th World Congress on Pain, sponsored by the International Association for the Study of Pain, is being held in Paris, France. For more information, contact: International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA, 98105. Tel: (206) 547-6409.

August 25-29: Canadian Academy of Endodontics 29th Annual Meeting being held at the Deerhurst Resort, in Huntsville, Ontario. For details, contact: Dr. W.B. Wiseman at (705) 737-4700.

September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact: WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

September 21-23: Syrian Dental Association 4th Scientific Congress will be held in Damascus, Syria. For details, write: Dr. Rashid Jhara, President, Syrian Dental Association, Jisr Al Abiad, Str, Egypt No. 52 PO Box (11104), Damascus, Syria.

October/Octobre 1993

October 1-3: Canadian Association of Dental Consultants Annual Workshop will be held at the Sheraton Halifax in Halifax, Nova Scotia. For more information, contact: Dr. William O. Adams, PO Box 2200, Halifax, Nova Scotia, B3J 3C6. Tel: (902) 468-9700, ext. 194.

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

October 15-16: 1993 CFDE/CDA Teaching Conference on Hospital Dentistry being held at the University of Toronto, in Toronto. To register, contact: Ms. Gay MacQuarrie at (613) 523-1770 or write the CDA, 1815 Alta Vista Dr., Ottawa, Ontario, K1G 3Y6.

November/Novembre 1993

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, being held in San Francisco, CA. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

Continuing Education 1993-1994

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June 11:

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June 20-25:

Dental Hygiene Refresher Course

For further information, contact:
Alumni Affairs and Continuing Education
Faculty of Dentistry

Dalhousie University
Halifax, Nova Scotia B3H 3J5
Tel: (902) 494-1674
Fax: (902) 494-2527

October 1993 - April 1994: Post-Graduate Program in Esthetic Dentistry

One weekend per month at Case Western Reserve University, Cleveland, Ohio. For information, contact: Dr. Dennis Tomasone, Department of Continuing Education, (216) 368-6761.

October 1993 - April 1994: Post-Graduate Program in Esthetic Dentistry

One weekend per month at Baylor School of Dentistry, Dallas, Texas. For information, contact: Ann Seals, Department of Continuing Education, (214) 828-8238.



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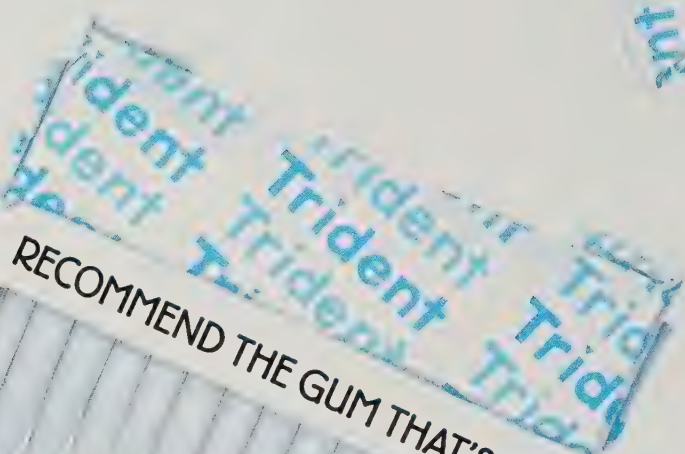


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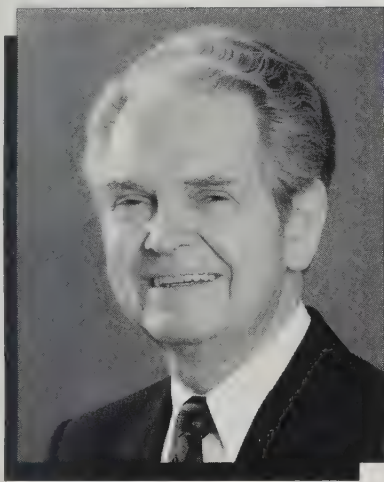


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Can You Read This?



Dr. P. Ralph Crawford,
Editor

Can you read this sentence? Consider yourself fortunate if you can. And notice I said read. I would never be presumptuous enough to think that you either enjoyed or understood the editorial ramblings of this simple scribe.

But at least you can read them. Believe it or not, 16 per cent of Canadians could not make the same claim. They can't read at all. Another 22 per cent can read and write only simple sentences.

As health care professionals, we have to be concerned by the fact that one in three Canadians are functionally illiterate. How can we feel comfortable or confident when 38 per cent of our patients cannot read or understand even basic health care information in print form? Not good, particularly when Statistics Canada based its assessment of literacy on a person's ability

to fill out a bank deposit slip, read the ads from the Yellow Pages, find a certain kind of apartment in a group of classified ads, compare grocery labels, or perform even the simplest arithmetic problem. These are activities that you and I do on a daily basis, without thinking. They're essential to our everyday life.

One of the more surprising statistics is that out of the 38 per cent of Canadians who are functionally illiterate, only two per cent are immigrants. What isn't surprising, unfortunately, is that most functionally illiterate Canadians are found among the poor, the long-term unemployed, minority groups, welfare recipients, or persons with disabilities. And, sadly, the largest group of functionally illiterate Canadians are senior citizens. In fact, Statistics Canada reports that as many as 64 per cent of the elderly have difficulty with everyday reading demands.

Equally disturbing is the fact that some areas of Canada are experiencing a 50 per cent high-school drop-out rate. As a result, far too many young people are among the functionally illiterate. These people are supposed to be our hope for the future, and we're letting them slip away.

And illiteracy is expensive. A 1985 American study estimated that illiteracy costs the U.S. about \$20 billion a year. Applying this figure to the Canadian situation, using a factor of 10 per cent, it is probably fair to say that illiteracy costs Canadians as much as \$2 billion a year.

Canada is one of the most advanced countries in the world, yet one third of its citizens are functionally illiterate. Why? In this day and age, how can so many Canadians be unable to read or write? The problem may be another of life's complexities for which there is no simple solution.

Wiley, who writes the comic strip *Non Sequitur*, may have as much insight into the dilemma as most. His recent contribution, "Evolution of Literacy," depicts the se-

quence of literacy through the ages, from a Neanderthal-type writing on a cave wall, to the Roman scribe, to a businessman reading the financial page, to the present – a couch potato flicking a channel changer. Maybe we old-timers, raised in an era without TVs, VCRs and CDs, were not all that disadvantaged. Perhaps we did gain something from those tedious hours of learning grammar, syntax and Latin declensions.

As a dentist, regardless of your age and background, you can help alleviate the literacy problem. The first step is to rid yourself of the assumption that everyone who seeks your services can read – one out of three can't. Once you've taken that first step, you can work to raise public awareness about adult literacy issues.

You should make an extra effort to recognize the symptoms of illiteracy, and then deal with the problem politely and confidentially. The patient who says, "Will you help me fill out this form, my glasses are broken," or, "I want my husband to see this first," may actually be hiding a reading problem. This person needs special attention, kindness and understanding.

Literacy concerns should also play a role in your daily routine. Keep your office language simple and avoid that dental school jargon. All reception area literature and pamphlets should carry the dental message in simple, clear language.

Some authorities suggest that reading material intended for universal comprehension should be written at an eighth or ninth grade level. We are happy to report that when CDA's latest dental information pamphlets were subjected to a readability test, they registered precisely within the recommended eighth grade level bracket.

The ability to read is indeed a precious commodity. Invest it well and share it generously. The dividends are immeasurable.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

JOURNAL

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No. 4

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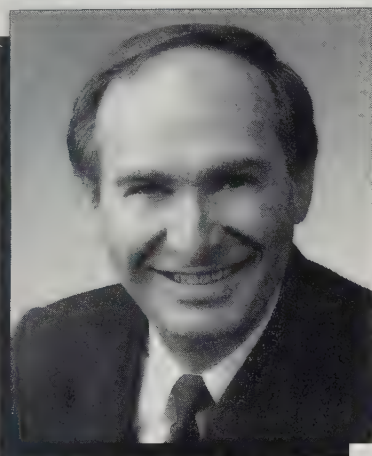


Product Information on page 336

3M

PRESIDENT'S COLUMN

Wearing the Other Person's Shoes



*Dr. Bernard Dolansky,
President*

Sometimes it's useful to put yourself in someone else's shoes and view the world from his or her perspective.

Let's say, for example, that I was a middle manager in a typical Canadian company. Chances are, I've been asked to tighten my belt and more than one of my fellow managers has been laid off in the past month. So, how would I feel if my wife came home from her semi-annual dental check-up and said: "Doctor X can't replace my filling. I'm going to need root canal and a crown, or I'll lose the tooth. He says it will cost over \$1,000"?

Even if I had a dental insurance plan that would cover the cost, I would probably feel resentful. I'd probably ask myself how anyone could charge so much money for two or three hours of work, when it would take me a week or more to earn the same amount. And if I didn't have a dental insurance plan, how would I feel about putting the new car on hold, or scaling down the family vacation? I think we all know the answer.

At the same time, however, I have to ask myself what the same middle manager would say if he were suddenly able to wear my shoes. How would this individual view dental fees if he or she had been involved in the discussion and debate on third party benefits, the uniform system of codes and list of services, fee guides and the economics of practice.

In the past 15 or so years, my involvement in organized dentistry has given me the opportunity to deal with these issues in great depth and detail. I also played a role in formulating and advancing many of the legitimate arguments that led to our current fee structure. Based on this experience, I believe that I am as well informed on the subject of fees as any dentist in Canada.

Nevertheless, I think that we must give due consideration to the "middle manager's" point of view. If Canadian dentistry is to succeed in its dual mission of providing a highly rewarding career to dentists and the highest standard of care to patients, we cannot ignore the question of accessibility. Quite simply, we cannot gainsay the fact that accessibility is directly tied to costs.

Let's go back to my introductory musings about the middle manager and his wife's \$1,000 molar. Put yourself in his shoes again. When you look at the world from this perspective, it's easy to see why our last Gallup poll on dental fees (taken in the spring of 1991) indicated that over 60 per cent of the population think that dentists charge too much.

These are supposed to be the lean and mean '90s. Dentistry, like many other small businesses, is caught in a classic margin squeeze. (The costs of running the average practice are rising faster than its gross income.) Most of the dentists caught in this crunch understand the reasons behind their rising costs, but they don't know what they can do about it, especially when the consumer is feeling equally squeezed.

It comes down to the question of supply and demand. I strongly believe that there is a limit to what

dentists can charge for their services. My gut feeling as a practitioner is that we have already reached the stage where patients are choosing to forego legitimate treatment needs because of economic concerns.

When a business reaches the point where price resistance makes it impossible to charge more for the goods and services it offers to the public, but the costs of delivering those goods and services continue to rise, there are two classic solutions. One is to use economies of scale to reduce operating costs; the other is to eliminate unnecessary overhead expenses and increase efficiency.

Both solutions have already been applied, to an extent at least, in dentistry. Group practices, cost-sharing agreements, and extended hours are all examples of economies of scale. Unfortunately, the savings generated by these strategies are typically not that significant.

That leaves us with eliminating some of our overhead and operating more efficiently. Again, this is a difficult area for dentistry. We can and should erase any suggestion of opulence from our dental offices, and we can be more careful about staffing and ordering supplies. But the possible cost savings are by no means large.

Perhaps it's time to look at the problem in an entirely different way, by putting ourselves in the middle manager's shoes once more. Maybe it's time to consider what the public can really afford to pay for dental services instead of what we can afford to charge. Above all, if we are to continue to deliver optimal dental health services to as many people as possible, we must resist the urge to raise our fees inordinately. Heresy of heresies, we might even look at rolling back fees in some areas. These are tough times and we must be prepared to think about tough solutions.

*Bernard Dolansky, BA, DDS, MS
President of the Canadian Dental Association*

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EXAN

GEARING UP FOR THE 21ST CENTURY

The company that pioneered computerization in the Canadian dental industry 12 years ago has recently undertaken several new initiatives to assure that Exan Technologies Inc. continues to be an industry leader throughout the '90s.

Exan recently announced the development of a new, full-featured, single-user system called Pro-Dent, which sells for \$3,988. It is fully upgradable to the popular Dentex multi-user system, and Exan is so excited and confident about this new system, it is offering it with a money-back guarantee.

In October 1992, Exan announced an important new partnership with Ash Temple Ltd., one of Canada's largest dental-supply organizations. As per the agreement, Ash Temple's 95 sales representatives nationwide have undergone extensive training and are able to:

- promote and sell Exan's new Pro-Dent dental practice management solution;
- provide doctors with a presentation of the software system using Exan's new CD ROM technology and video;
- give full, in-person demonstrations of this exciting technology.

This combining of forces gives Exan a unique opportunity to showcase its products all across the country, using the experience and expertise of Ash Temple's knowledgeable and well-trained staff.

In addition to broadening its sales base, Exan has combined and expanded its service, training and support capabilities. Utilizing the industry's most sophisticated service-control system, it is able to offer comprehensive service support throughout Canada. With this system in place, it is guaranteed that all of Exan's clients are highly trained on the software and only a phone call away from help with any problem that may arise.

After an extensive study of practice management computer systems across North America, a prominent U.S. consulting firm concluded that Exan's system is the most comprehensive and flexible one available, and it offers the features most often requested by growing dental offices. Exan refused to sit back and relax after such a glowing endorsement. Instead, it released its newest version of Dentex software at the start of the year. The program has new-look windowing and a vast array of special enhancements, more than ever before included in a single release.

Following close on the heels of that project is a new generation of dental software. For 1993, Exan has budgeted \$1 million for the development of this computerization. Using the latest technology, it will give offices a wide range of capability and integration, going far beyond current practice management systems. Thus, as Exan's clients upgrade and enhance to keep a step up on their competitors, its software programs will keep pace.

With well over a decade of experience, Exan has provided computer systems to more dentists in Canada than any other company. With its slate of current and future projects well-defined and backed by stable financing, Exan expects to remain the standard by which all other systems are measured.

NEWS UPDATE

ADA Appoints New Executive Director



Dr. John S. Zapp

Dr. John S. Zapp has been named as the new executive director of the American Dental Association (ADA).

Prior to signing on with the 140,000-member ADA, Dr. Zapp was the vice-president for government affairs of the American Medical Association (AMA), and headed the AMA's lobbying team in Washington, D.C.

A native of Idaho, Dr. Zapp, 60, graduated from Boise College in 1957 after serving three years in the United States Marine Corps. He subsequently received his dental degree from Creighton University, in 1961, and established a general dentistry practice in Oregon.

Dr. Zapp assumed his new post April 1. He replaces Dr. William Allen, who had served as ADA's executive director in an interim capacity since last summer, when long-time executive director Dr. Thomas Ginley retired. ■

Renowned Orthodontist Dead

Dr. Egil Peter Harvold, a world-renowned clinician and researcher, passed away suddenly in Oslo, Norway, November 17, 1992. He was 80.

Dr. Harvold studied medicine

and dentistry in Germany and Norway in the early 1930s, and became a practising orthodontist in Norway in 1937. He received his PhD in anatomy in Oslo in 1954. Throughout his life, Dr. Harvold was especially interested in the treatment of cleft palate and other craniofacial anomalies. In 1952 he initiated the cleft palate treatment centre at the Hospital for Sick Children in Toronto. Seven years later, he became professor and head of the orthodontic department at the University of Toronto, a position he held until 1961.

Dr. Harvold received international attention and acclaim for his research, which established the basis for radical improvements in the treatment of orofacial clefts. He was also almost single handedly responsible for the introduction of functional appliance therapy in North American orthodontics.

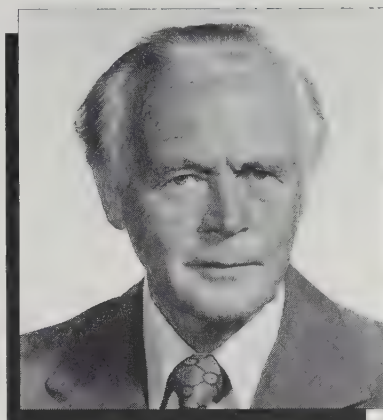
Other aspects of Dr. Harvold's research included work on the relationship between genetic and environmental factors in the development of the head and face. His experimental research also showed that it was possible to change the oronasal functions and mandibular posture that result in the development of various types of malocclusions.

Dr. Harvold's achievements earned him many international honors, including an honorary doctorate from the University of Toronto and an honorary membership in The Royal College of Dentists of Canada. ■

CDA Withdraws Support for STARPHONE

CDA has asked the *Toronto Star* to remove the association's name from the dental messages offered on the newspaper's STARPHONE line.

CDA's name has been associated with STARPHONE since 1991, when the association was



Dr. Egil Peter Harvold

approached by the *Star* and asked to write a series of dental messages for the line – a public call-in service offering information on a large variety of topics. CDA was aware that the *Star* planned to sell 15 seconds of advertising time on each message. When the service became operational, the dental messages were listed in the *Star* under the heading "Dental Line." A credit line reading "from the Canadian Dental Association" was published immediately below the title.

It has since come to CDA's attention that the 15-second advertising spots on the dental messages were sold to a Toronto dentist, Dr. Edward Phillips. Further, the *Star* has added four new dental messages, all provided by Dr. Phillips, and the heading "Dental Line" has been changed to "Dental Cosmetics." In effect, all the dental messages, both those provided by CDA and those provided by Dr. Phillips, are now listed under the heading "Dental Cosmetics."

In hindsight, CDA's name should never have been associated with the dental messages carried on STARPHONE, regardless of their authorship. Given that the association cannot realistically purchase all of the advertising carried on all the dental messages, at a cost of \$15,301 per year, CDA has asked the *Star* to remove its name from the dental messages. CDA has also suggested to the *Star* that they may wish to change the title of the

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messages back to "Dental Line," as this more appropriately reflects the content of the messages.

CDA's management and staff sincerely regret the situation created by the association's involvement with STARPHONE. ■

Lobbyist Registration Proposals Concern CDA



Mr. Jardine Neilson
CDA executive director

CDA is concerned that proposed amendments to Canada's Lobbyists' Registration Act could limit the "free and open" access of non-profit organizations to government.

Mr. Jardine Neilson, CDA's executive director, recently wrote to the federal committee on Consumer and Corporate Affairs, which is considering changes to the Lobbyists' Registration Act, to express the association's concerns:

I am writing on behalf of the Canadian Dental Association, to bring comments and concerns regarding the review of the Lobbyists' Registration Act and the government's review of how the cost of the lobby registry might be recovered through registration fees, to the attention of the committee.

The Canadian Dental Association supports the purposes of the Lobbyists' Registration Act assented to in September of 1988 as described in the preamble to the Act. In compliance with the Act, the CDA has registered appropriate individuals as Tier II Lobbyists. In our view, the provisions for Tier II

Lobbyists, as identified in Section 6, are appropriate and should be maintained.

The preamble to the Act states "whereas *free and open* access to government is an important matter of public interest;" and "whereas a system for the registration of paid lobbyists should not impede *free and open* access to government." The association is, therefore, concerned with proposals contained in Bill C-76, which, through amendment to Section 12 of the Lobbyists' Registration Act, would enable the minister of consumer and corporate affairs, Canada, to charge lobbyists a fee to register. The CDA believes that a potential financial impediment to communication between the CDA and government would be counter to the best interests of the publics we both serve.

The CDA is a national non-profit health association, incorporated under Part 2 of the Canada Corporation's Act. Through its mission statement, the association is dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.

CDA works in partnership with the federal government on behalf of the profession and the public. A recent example of this was the 1991 CDA conference on the "Impact of HIV and Other Infectious Agents in Oral Health Care," which was funded by CDA and Health and Welfare's Federal Centre for AIDS. The conference allowed for a careful and comprehensive review of all CDA policies and guidelines concerning infection control, and resulted in amendments and recommendations to further protect the public and the profession. It met the joint need for government and the CDA to act in light of public concern and professional responsibility.

We believe that impediments to communication with government, financial or otherwise, would have a detrimental effect, not only on the association's members and the profession of dentistry, but on the oral health of Canadians as well. We therefore submit to the committee that non-profit organizations, especially those concerned

with public health and safety, be exempt from fees in registering as Tier II Lobbyists. The committee's positive consideration of this request will ensure that free and open access to government by non-profit organizations is maintained in Canada. ■

Fluoride Recommendations Released

Water fluoridation is still an effective and valuable method of preventing dental caries in children.

This and other findings were contained in the recently-released report of the April 9-11, 1992, Canadian Conference on the Evaluation of Current Recommendations Concerning Fluorides. The full text of the conference recommendations is reprinted below as a service to Canadian dentists:

Recommendations

General consensus was achieved by the Working Group on the following statements:

Water Fluoridation

1. Water fluoridation at recommended levels is endorsed and encouraged because:

- a) Water fluoridation is an efficacious/effective measure for preventing dental caries in all age groups.
- b) Water fluoridation equitably provides the greatest benefits for those who have limited access to other sources of fluoride or other caries preventive technologies.
- c) At recommended doses, there is no evidence that water fluoridation presents a risk to general health.
- d) Water fluoridation is the preferable source of systemic and topical fluoride to prevent dental caries.

2. A scientific panel should be convened to review and evaluate the data concerning standards on the minimal, optimal and maximum concentrations of fluoride in fluoridated communities, and the maximum allowable concentration of fluoride for naturally fluoridated communities because of the:

- a) Potential risk of dental fluorosis (a side effect which may or may not

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be an esthetic concern in the future, but is in no way a major dental health problem at this time).

b) Increased exposure of the public to a variety of different sources of fluorides.

c) Evidence that increased exposure to fluorides has increased the prevalence of fluorosis.

d) Impact of variations in ambient temperature and humidity, and the increased use of air conditioning throughout Canada that need to be considered for the determination of optimal concentrations.

3. Fluoride levels in community water supplies should be properly monitored and adjusted routinely to prevent wide fluctuations in fluoride concentrations.

4. Manufacturers should provide labelling on foods and beverages to indicate the fluoride content of the product.

5. The Canadian government should institute legislation requiring manufacturers to provide information on fluoride content of their products.

6. Standards, e.g. milligrams of fluoride per unit volume, should be developed to report the fluoride concentrations in products.

7. The Canadian government should assign a senior dental officer as a spokesperson and expert to provide the official government position, and to coordinate and help disseminate information on issues relating to water fluoridation.

Fluoride Supplements

1. Fluoride supplements:

a) Should **not** be recommended for children less than three years old.

b) Should be targeted only for individuals or groups at high risk to dental caries.

c) Should be sold in a chewable or lozenge form only and as a behind-the-counter product.

d) Should **not** be recommended in fluoridated areas.

e) Should be packaged with a written dosage regimen.

2. The use of fluoride supplements may be appropriate for targeted individuals and groups for children three years and older in areas with less than or equal to 0.3 parts-per-

TABLE 1

Estimated mean fluoride level from all ingested fluids

Age of Child	Fluoride in Water Supply < 0.3 ppm
3, 4 & 5 yrs	0.25 mg*
6+ yrs	1.0 mg

*if there is not regular use of fluoridated toothpaste, then 0.5 mg is recommended.

million (ppm) fluoride in the water according to the following dosage schedule: (See **Table 1** above.)

3. The estimation of the mean fluoride ingested from all fluid sources should include all home- and child-care water sources, and the possible impact of water filtration devices within the home.

4. Commercial interests should be requested formally to formulate proper dosage regimens both for chewable fluoride and multivitamin supplements.

Fluoride Dentifrices

1. The following guidelines are proposed for children under 6 years of age who use fluoridated toothpaste:

a) Brushing should normally be twice a day.

b) Brushing should be supervised by an adult.

c) A pea-sized amount of toothpaste (or a single ribbon/strip of dentifrice not to exceed half the length of the head of a child-sized toothbrush) should be dispensed, preferably by the supervising adult.

d) Swallowing should be discouraged (after brushing expel, rinse with water and expel the rinse)

2. The above guidelines should be made available to the public either through product labelling on the package or by product inserts.

3. Product labelling or package inserts containing these guidelines should be included in the criteria for awarding the CDA Seal of Recognition for dentifrices containing fluoride in the 1,000 - 1,100 ppm range.

4. Studies to investigate the efficacy/effectiveness of a lower dose fluoride dentifrice, i.e. 500 ppm, for use by children under six years of age should be encouraged.

5. Manufacturers should be discouraged from marketing toothpastes, which, because of their taste or appeal, encourage swallowing or excessive use.

6. Manufacturers should be discouraged from marketing toothpastes that have "extra strength" fluoride content (i.e. greater than 1,100 ppm).

Professionally Applied Topical Fluorides (Solutions, Gels and Varnishes)

1. The selective use of professionally-applied topical fluorides (gels and varnishes) should be endorsed. The decision to use topical fluorides will be based on the assessment of caries risk of patients as determined by the dentist.

2. Scientific evidence from clinical trials indicate that a prophylaxis prior to a professionally-applied topical fluoride application is not necessary, however, if a professional prophylaxis is performed selectively prior to the application of topical fluoride, a non-fluoridated prophylaxis paste is recommended.

3. Studies on the effectiveness of professionally-applied topical fluorides with a reduced concentration of fluoride should be promoted.

4. The following procedures for the professional application of fluoride gels should be encouraged:

a) Apply for four minutes in well-fitting trays with absorbent liners (custom trays).

b) Use only a ribbon of gel in each tray, approximating 2.5 mL in each full-size tray, but less in small trays for children.

c) If custom trays are used, only five to 10 drops of gel should be dispensed.

d) Place the patient in an upright

position during application.

e) Use suction to remove excess saliva/gel mixture during and after the procedure.

f) Remove excess gel at the conclusion of the procedure.

g) Instruct the patient to expectorate as much of the material as possible following the removal of trays and not to rinse, eat or drink for 30 minutes after the procedure.

Fluoride Mouthrinses

1. The use, in dental public health school programs, of fluoridated mouth rinses (currently 0.2 per cent sodium fluoride administered weekly or biweekly) should be considered for use only in high risk populations aged six years and over.

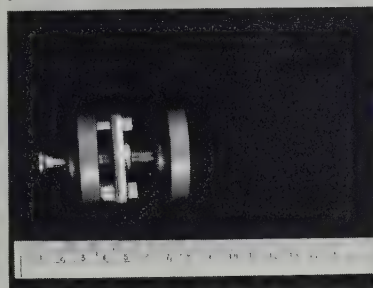
2. Self-applied, daily rinse programs using over-the-counter or specially-formulated fluoride mouth rinses (0.05 per cent sodium fluoride) should be used only in high risk individuals who are aged six years and over.

3. All over-the-counter fluoride mouth rinses that are used daily (0.05 per cent sodium fluoride) should be labelled to indicate that they should not be used by children under the age of six.

4. Manufacturers of over-the-

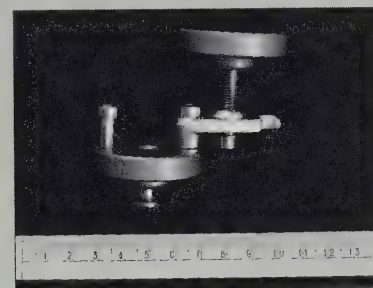
WHAT'S IT?

We are not really sure if this month's "What's It?" is right side up. Made of sturdy metal, it is about 6.5 centimetres high and looks as if it has never been used. We believe that it is a dental instrument of some kind, because it was found in a box of dental instruments, all about 30 or 40 years old.



By turning the part that doesn't have a "knob" on it, the apparatus can be loosened so that the other part can swing free.

If you can help identify this "instrument," please contact Dr. Ralph Crawford, *Journal* Editor, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. ■



counter fluoride mouth rinses should be encouraged to develop alcohol-free products or products with a reduced alcohol content.

5. The Health Protection Branch of Health and Welfare Canada should reconsider its approval of 0.2 per cent sodium fluoride mouth rinses that can be purchased over-the-counter.

Self-Applied Fluoride Gels

1. Self (tooth brushing) applied fluoride gels should not be used in children under six years of age and should not be routinely used by adults when regular toothpastes are used.

2. The daily use of fluoride gels in customized trays for individuals at

Retraction and Apology

Under the heading "News Update" in the February issue of the *Journal*, the following statement appeared in an article relating to unsolicited mailing offers:

"The other mailing – which offered dentists a free VCR, TV or CD player in return for the purchase of \$598 worth of diamond burs – came from M.D.T. (Canada) Industrial Dental Tools Inc. of Montreal. Consumer and Corporate Affairs advice on this offer is: "Buyer beware... whenever an offer seems too good to be true, it usually is.""

The comment made by an official of Consumer and Corporate Affairs was not in response to an

inquiry about this particular offer, but only about unsolicited offers in general. The *Journal* did not make any enquiry through the department or in any other way as to the validity, accuracy or results of this offer which had read in part as follows:

"You'll get absolutely free, your choice of a 14-inch color TV (Toshiba), VCR (JVC), or compact disc player (JVC), all with remote control included and under full warranty of Toshiba and JVC Canada.

"You'll receive it immediately when you order NOW, 200 high-quality sterilizable diamond burs for only \$598 (\$2.99 each) directly from the manufacturer's branch."

MDT has provided the *Journal* with a list of hundreds of dentists who, it says, have taken advantage of this offer and who, it says, in every case have received the

equipment promised. The *Journal* has canvassed a number of the dentists listed and in every case, it has been confirmed that indeed the undertaking given in the offer has been honored.

Understandably, MDT was outraged at the unjustified and inaccurate statement made in the *Journal* and is concerned that it would have an adverse effect on its business and reputation.

Both CDA and the *Journal* acknowledge this unfortunate error on their part and sincerely regret and apologize to MDT (Canada) Industrial Tools Inc. for any difficulties which the article has caused.

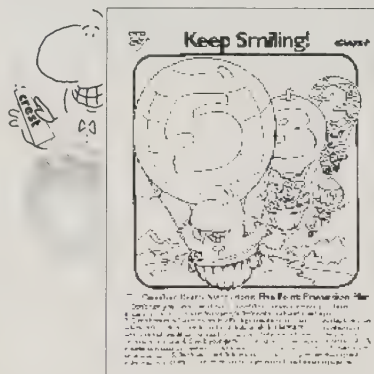
P. Ralph Crawford, BA, DMD
Editor of the *Journal* of the
Canadian Dental Association

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very high risk to dental caries may be appropriate. If gels are used by children under the age of six years, this should be done only on the direction of a dentist in order to minimize the risk of ingestion. If customized trays are used, only five to 10 drops of gel should be dispensed. When customized trays can't be used because of patient management considerations, the application of the gel with a toothbrush may be appropriate for high risk individuals. This brushing should be closely supervised by an adult. ■

CDA/Crest "Egg-Speriment" Excels



From all reports, it appears that the CDA/Crest "egg-ceptional egg-speriment" has been a cracking success with elementary school children across Canada.

Through the program, initiated under a joint agreement between CDA and Procter and Gamble, more than 9,000 elementary school teachers received information on an in-classroom experiment that demonstrates the cavity-preventing effects of fluoride on tooth enamel.

Ready for Dental Health Month

The CDA/Crest egg-speriment program has been designed to extend beyond the classroom, however. Full details of the program were distributed to every CDA member dentist with the March issue of the *Journal*.

As part of their Dental Health

Month promotion this April, member dentists are being encouraged to photocopy and distribute the egg-speriment materials to their younger patients. The youngsters – with mom and dad's help, of course – can then perform the egg-speriment at home to learn firsthand how fluoride fights tooth decay.

Member dentists also received a "Live Bob" Five Point Prevention Plan coloring sheet. By photocopying these sheets and leaving them in the reception area, dentists can help children to learn the basics of oral health care: Don't rush your brush; clean between; eat, drink, but be wary; check your gums; don't wait until it hurts.

Other possibilities include running a month-long drawing contest, with a prize for the best "Live Bob" drawing submitted by a patient during April. The drawings can be displayed in the participating dentist's office throughout Dental Health Month, further enhancing their educational value. ■

Obituaries

Leggett, Dr. Gordon Dargavel: Dr. Leggett graduated from the University of Toronto's dental faculty in 1931. He served in the Royal Canadian Dental Corp for six years during the Second World War. He practised dentistry in Toronto for 50 years, and was a life member of the Canadian Dental Association. He died September 22, 1992.

Partridge, Dr. R.E.: Dr. Partridge graduated from the University of Toronto's dental faculty in 1937. He was a life member of the College of Dental Surgeons and the Canadian Dental Association. He died February 15, 1993, in Prince Albert, Saskatchewan.

Connor, Dr. Donald Grant: Dr. Connor graduated from the University of Manitoba's dental faculty in 1965. He practised dentistry in Winnipeg, Manitoba. He died February 20, 1993, at the age of 55.

Epp, Dr. Eric J.: Dr. Epp graduated from the University of Toronto's dental faculty in 1974. He practised dentistry in Toronto, Ontario.

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Prescription relief of oral pain and inflammation.

Summary of prescribing information

THERAPEUTIC CLASSIFICATION
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Action

Animal studies using the parenteral route have shown that "Tantum" Oral Rinse possesses properties of an analgesic—anti-inflammatory agent. This effect is not mediated through the pituitary-adrenal axis. Studies using the topical route have demonstrated the local anesthetic properties of benzylamine hydrochloride. In controlled studies in humans with oropharyngeal mucositis due to radiation therapy, "Tantum" Oral Rinse provides relief through reduction of pain and edema. Similar studies in patients with acute sore throat demonstrated relief from pain.

Indications

"Tantum" Oral Rinse is indicated for relief of pain in acute sore throat and for the symptomatic relief of oropharyngeal mucositis caused by radiation therapy.

Contraindications

"Tantum" Oral Rinse is contraindicated in subjects with a history of hypersensitivity to any of its components.

Precautions

The use of undiluted "Tantum" Oral Rinse may produce local irritation manifested by burning sensation in patients with mucosal defects. If necessary, it may be diluted (1:1) with lukewarm water. Since "Tantum" Oral Rinse is absorbed from the oral mucosa and excreted mostly unchanged in the urine, a possibility of its systemic action has to be considered in patients with renal impairment.

Use In Pregnancy

The safety of benzylamine HCl has not been established in pregnant patients. Risk to benefit ratio should be established if "Tantum" is to be used in these patients.

Use In Children

Safety and dose directions have not been established for children five years of age and younger.

Adverse Reactions

The most frequent adverse reactions reported are: local numbness (9.7%), local burning or stinging sensation (8.2%), nausea and/or vomiting (2.1%). The least frequent were reports of throat irritation, cough, dryness of the mouth associated with thirst, drowsiness and headache.

Treatment of Overdosage

There are no known cases of overdosage with benzylamine HCl gargle. Since no specific antidote for benzylamine is available, cases of excessive ingestion of the liquid should receive supportive symptomatic treatment aimed at rapid elimination of the drug.

Dosage and Administration

Acute sore throat: Gargle with 15 mL every 1 1/2 to 3 hours keeping in contact with the inflamed mucosa for at least 30 seconds. Expel from the mouth after use.

Radiation Mucositis: Use 15 mL as a gargle or rinse repeated 3-4 times a day, keeping in contact with the inflamed mucosa for at least 30 seconds and then expel from the mouth. Begin "Tantum" Oral Rinse the day prior to initial radiation therapy; continue daily during the treatment and after cessation of radiation until the desired improvement is obtained.

Availability

Tantum Oral Rinse is available in 100 and 250 mL bottles. "Tantum" Oral Rinse is a clear yellow-green liquid containing 0.15% benzylamine hydrochloride in a pleasant-tasting aqueous vehicle with 10% ethanol.

Product monograph is available on request.

References:

- Simard-Savoie S and Forest D. *Curr Ther Res* 1978; 23(6):734-45.
- Whiteside MW. *Curr Med Res Opin* 1982;8:188-9.
- Wethington JF. *Clin Ther* 1985;7(5):641-6.
- Product monograph.
- Yankell SL. Evaluation of benzylamine HCl in patients with aphthous ulcers. *The Compendium of Continuing Education* 1981; 11(1).
- Epstein JB. *Int J Radiation Oncology Biol Phys* 1989; 16(6):1571-5.

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BOOK REVIEWS

The Rise of the Ontario Dental Association

By Dr. James W. Shosenberg

1992, Ontario Dental Association, Toronto, Ontario
301 pages, B&W photographs, \$19.50

Published to commemorate the Ontario Dental Association's 125th anniversary, this book is much more than its subtitle, "125 Years of Organized Dentistry," suggests. In fact, it is a complete history of dentistry in the province of Ontario.

In the prologue, the reader is introduced to an 18th century marketplace charlatan, and then quickly given a short outline of Pierre Fauchard's principle of sharing professional knowledge. Fauchard's principles characterize the role and objectives of the ODA throughout history, and set the tone for the remainder of the book.

The 12 chapters are presented in chronological order, moving the reader from 1867 and Barnabus Day's efforts to found the Ontario Dental Association, to the 1990s and the introduction of CDAnet. Nothing is left out.

The author – well known among dental professionals as the editor of *Ontario Dentist* – undoubtedly conducted extensive research. The text is replete with numerous quotes taken from past ODA minutes, which give authenticity to the many descriptions of historical events. Important events such as the passage of the world's first dental act in 1868, as well as milestones in dental education, dental public health, advertising, journalism, the denturist movement and capitation are dealt with in detail. So, too, are the dental/political movements of the provincial organization as it struggled for recognition and confidence from dental professionals and the public. Ontario dentists will be interested in the Woods, Gordon report of 1963, which laid the foundation for today's modern, and voluntary, ODA structure. What makes this history book even more interesting is its short accounts of the technical de-

velopments in dentistry, including office chairs, vulcanite dentures, anesthetics, X-rays, etc.

The author has an easy style for the most part, but he is inconsistent. He is sometimes vernacular, using words like "hot-shots, heavy hitters, slick piece of work, flim flam, too-clever-by half" (which he uses several times), but also writes phrases that at first reading are difficult to grasp, for example, "inculcated telepathically into the uninitiated."

The book is flawed by an unfortunate lack of editing. It is published with a separate printed errata listing 22 items, and even that list is incomplete – other errors were missed. More thorough editing would have picked up errors such as printing words out of context ("braking" rather than "breaking," for example), the misspelling of "announcement," and having Canada enter the Second World War on September 8, 1939, rather than on September 10.

In addition, the absence of an index makes it difficult to quickly locate passages on the particular people and events mentioned in the book. This difficulty isn't helped by the innovative wording of chapter titles, for instance, "Rise up and call us blessed," which does not exactly give the curious browser much of an idea of the content. However, the 112 black and white photographs included in the book, most of past presidents, are of reasonable quality and give a personal touch to the text.

An interesting side note is that ODA required the financial support of eight corporate sponsors – their names are listed just before the table of contents – to make the publication of this book possible.

The Rise of the Ontario Dental Association is the province's first complete history of dentistry. It should make interesting and informative reading for all dentists – in fact, for anyone interested in the profession. And it should be a "must read" for every dentist in Ontario serving on any one of the numerous local and provincial dental

committees and boards. Insight into the past is one of the best ways to ensure the effectiveness of the future.

An excellent contribution.

Reviewed by:

P. Ralph Crawford, BA, DMD
Editor, Journal of the Canadian Dental Association

AIDS and Canadian Law

By Lorne E. Rozovsky and Fay A. Rozovsky

1992, Butterworths Canada Ltd., Markham, Vancouver
147 pages

Without a doubt, the talented wife and husband legal team of Fay and Lorne Rozovsky are Canada's most prolific writers in the realm of health law. Either singly or together, they have published 13 books dealing with a broad array of topics of interest to health care practitioners, including dental law, consent to treatment, patients' rights, hospital law, patients' records, risk management, and health facilities. These publications are in addition to their countless articles, which appear regularly in professional journals.

The latest contribution by this knowledgeable and accomplished duo – although of consummate interest to health professionals – is pertinent to all facets of society. *AIDS and Canadian Law* does not stop at HIV testing, the duty to advise, issues of communicability, liability for non-transfusion infection or for blood transfusions and transplants, control and prevention. This book also deals with the other realities of AIDS, covering such topics as marriage and divorce, discrimination, immigration and travel, AIDS and the criminal law, death and dying, and the interests of those in funeral service.

Not so long ago, many dentists were threatened with the departure of staff members if they agreed to treat HIV-infected patients or patients with diagnosed AIDS. One

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would hope that education should, by now, have made this situation anachronistic, particularly with the unassailable universal blood and body-fluid precautions practised in clinical facilities. However, there remain, unfortunately, at least atavistic vestiges of discrimination. As the authors make clear, however, human rights legislation – notwithstanding some variations among provinces – essentially makes it a human rights' violation not to enter into a contractual relationship with a patient solely on the basis that the person is thought to be HIV positive or is believed to have AIDS.

The issue of informed consent takes on enormous consequences when the dentist is seropositive. The question at hand is, is the practitioner obligated by duty to inform the patient of this? Neither the Canadian Dental Association nor the Canadian Medical Association specifically advises members who are infected to inform patients of their condition. Instead, the use of universal precautions is stressed, as well as determining the compe-

tency of a provider to practise as his or her illness progresses. Canadian courts have not, as yet, been called on to adjudicate on the issue. Notwithstanding the positions taken by the associations, which are based on the fact that the risk of an infected practitioner transmitting the disease to a patient is extremely small at best, and virtually removed if universal precautions are followed, the question of whether the practitioner should decide if even a small risk should be taken or if the patient being exposed to that risk should decide, is still vexing. The authors contend that most people would argue that it is the patient who should decide, particularly since even the remotest risk of HIV transmission in an invasive procedure constitutes a material risk. And under Canadian consent law, as originally articulated by the Supreme Court of Canada in *Riebel vs Hughes* and *Hopp vs Lepp*, this risk would have to be disclosed.

The Rozovskys conclude that while the confidentiality of one

person must be respected, it is always subject to the health and life of others.

The reading of *AIDS and Canadian Law* convinces the reader that, in a few years time, the subject will have to be revisited. Although this book deals magnificently with the legal principles attending the identified issues, until there are significant amendments to current statutory law and/or court judgments provide definitive answers to the host of questions that this subject engenders, there will have to be a dependency on legal opinions that are based on the applicable principles.

AIDS and Canadian Law provides a wealth of information that should be of immense interest to all Canadian health care practitioners.

Reviewed by:

Wesley J. Dunn, DDS

Professor Emeritus, Division of Community Dentistry Faculty of Dentistry, The University of Western Ontario.

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¹Lareto, JI. Pros. Dent., 16:758-765, 1966.

²Cochran, Miller, Sheldrake, J. Amer Dent. Assn., 119:141-144, 1989.



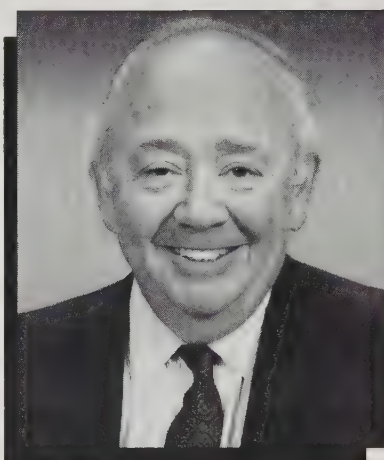
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How can the Canadian Dentists' Insurance Program (CDIP) get even better? By offering dentists broader coverage for their premium dollar.

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Dr. Rod Moran
President of CDSPI

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Dentists who have previously purchased the three office plans separately, or are now covered under two of the three plans, can benefit by switching to TripleGuard. But don't just take our word for it. Read the following case reports, which describe the benefits enjoyed by dentists, like you, who switched to TripleGuard.

Case One

A dentist in Longueuil, Quebec, was covered under the three office plans, separately. He saved \$172.76 in annual premiums when he switched to TripleGuard, and received unlimited practice interruption insurance instead of the \$92,000 he had under his previous coverage.

TABLE I

	Premium Without TripleGuard	TripleGuard Premium
Office Contents (\$90,000 coverage in a fire-resistant building, with \$250 deductible)	\$366	\$447
Practice Interruption (\$92,000 coverage)	\$139.76	(included, unlimited coverage)
Comprehensive General Liability (\$2 million coverage)	\$114	(included)
Total Premium	\$619.76	\$447
Total Saving		\$172.76

Case Two

A dentist in Cornerbrook, Newfoundland, had two of the three office plans. With TripleGuard, he received unlimited practice interruption coverage and still saved \$123 in annual premiums.

In a few instances, your premiums may increase slightly when

you switch to TripleGuard, but in all cases, you will be getting broader coverage. You need to weigh the benefits for yourself.

TABLE II

	Premium Without TripleGuard	TripleGuard Premium
Office Contents (\$130,000 coverage in a masonry building, with \$500 deductible)	\$583	\$574
Comprehensive General Liability (\$2 million coverage)	\$114	(included)
Total Premium	\$697	\$574
Total Saving		\$123.00

Case Three

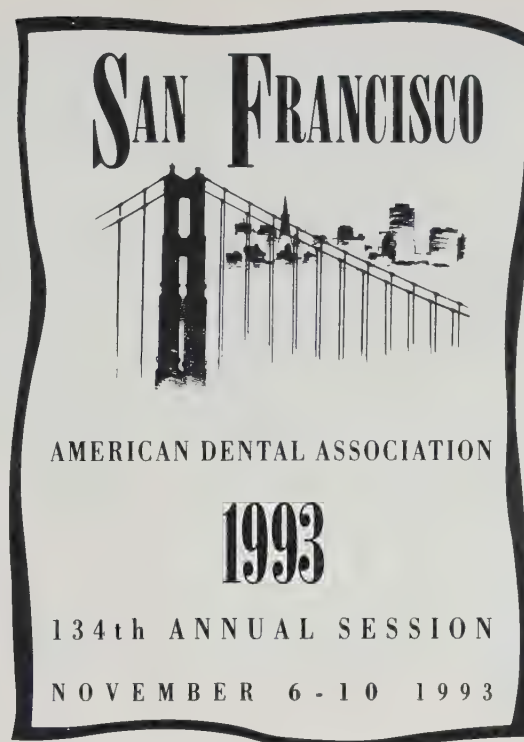
A dentist in Toronto, Ontario, increased his annual premium by only \$15.16 when he switched to TripleGuard. In return, he received unlimited practice interruption coverage (which he did not have before).

TABLE III

	Premium Without TripleGuard	TripleGuard Premium
Office Contents (\$160,000 coverage in a fire-resistant building, with \$500 deductible)	\$294	\$545
Practice Interruption (\$78,000 coverage)	\$121.84	(included, unlimited coverage)
Comprehensive General Liability (\$2 million coverage)	\$114	(included)
Total Premium	\$629.84	\$447

You owe it to yourself not to miss out on this opportunity. Call Canadian Dental Service Plans Inc. (CDSPI) today to find out how you can benefit by switching to TripleGuard. One of our personal service representatives will provide you with a cost comparison. So far, 3,201 CDIP participants have switched to TripleGuard...and the number is growing.

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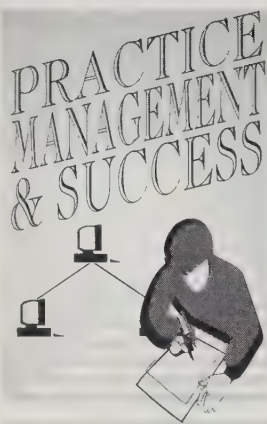
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Imtiaz Manji, B.Sc.

President of Expendent

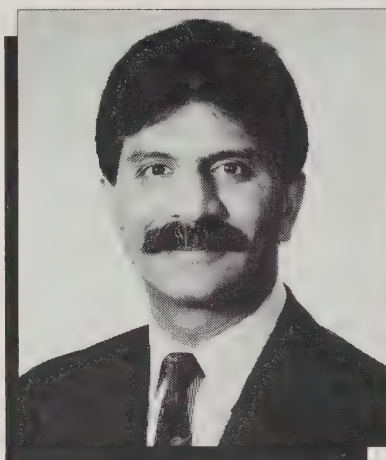
When it comes to bringing associates on board, nothing seems to cause more discomfort – for both the senior dentist and the associate – than the compensation package.

This mutual anxiety often stems from the fact that the figure given for the associate's remuneration, be it a high of 45 per cent of his or her collections or a low of 25 per cent, reeks of arbitrariness. The associate may accept the package, but wonder whether he or she is being "taken." Conversely, the senior dentist may come to believe that he or she was prematurely generous. No one seems to know whether the compensation package is appropriate or fair, because they haven't done their homework.

As the senior dentist, it's incumbent on you to look at how and why you've arrived at a particular compensation package, and then to share this information with your potential associate. Only then will the merits or shortcomings of the package be completely evident.

Determining Your Motivation for Hiring an Associate

Dentists are motivated to hire associates for a variety of reasons. Some of these can be categorized as financial, while others might be more appropriately termed psychological. Financial reasons range from having a desire to make better use of the practice (by offering extended hours or services), to splitting overhead costs. The main benefit of taking on an associate is



Imtiaz Manji, B.Sc.

usually economic, either through increased revenue or reduced overhead.

Where the primary motivation for hiring an associate is psychological, dentists may be suffering from burnout, and therefore want to reduce their workload, or they might want the security of having an associate in place before they retire. Psychologically-motivated dentists are often prepared to accept a small or negligible increase in their net earnings after hiring an associate, as long as they are rewarded by not having to work as long and hard to achieve the same production.

Before finalizing the associate's compensation package, the senior dentist should pinpoint why he or she wants to hire an associate. (This is assuming, of course, that you've already put yourself through the initial test of determining that your practice has the natural wealth, i.e. patients, to bring in an associate.)

Once you know what your primary motivation is, you'll be better equipped to determine how much an associate would be worth to you. For instance, if you're economically motivated, you will probably be more aggressive in your negotiations with a potential associate than you would if you were seeking a lifestyle improvement.

Figuring Out Your Financial Picture

Rather than arbitrarily saying, for example, "I'm willing to offer my associate 30 per cent of his or her collections," investigate what the market is offering. This figure may be more or less than you're able or willing to offer, but it's worth noting. More importantly, though, find out what your practice can afford. That's really the bottom line.

But how do you determine this figure? You do it by understanding your practice financials, i.e. your gross income, which is made up of your operating costs (overhead) and your true profit.

In every practice, there are fixed overhead costs (rent, staff salaries, etc.) that must be paid regardless of your level of busyness, as well as variable overhead costs (lab and supplies) that vary according to your production. Have a look at your fixed and variable overhead costs for the last two or three years to determine how much they've increased. Use this figure to forecast overhead costs for the coming years.

TABLE I

	Year One (\$)	Year Two (\$)	Year Three (\$)
Associate Collection Net Of Lab	150,000	200,000	250,000
Office Dental Supplies at 8%	12,000	16,000	20,000
Reserve Funds	12,000	12,000	12,000
Professional Fees	4,800	Discretionary	Discretionary
Facility Improvements/Enhancements (amortized over 5 years)	12,000	12,000	12,000
Additional Staff	Full-time assistant Part-time recept. 42,000	Full-time assistant Full-time recept. 54,000	Full-time assist. & recept. with 6% increase • 57,240
Risk Factor	24,000	10,000	—
Marketing Costs	3,000	Discretionary	Discretionary
Total Expenses	109,800	104,000	101,240

When you're calculating your fixed overheads, make sure that you remove all discretionary expenses such as travel or a spousal salary, since these costs are actually benefits that you enjoy as a business owner and, as such, are really part of your gross profit.

Let's assume that your practice revenue is \$350,000 and your total operating overheads equal \$250,000. Your true profit or doctor's compensation is \$100,000. If you were able to increase your practice revenue to \$400,000 without hiring additional staff, the profit on this additional \$50,000 would be substantial. Assuming lab expenses of 12 per cent of revenue, you would deduct \$6,000, leaving \$44,000. If your office and clinical expenses were eight per cent of revenue (\$4,000), your profit would be \$40,000 (((\$50,000 - \$6,000) - \$4,000).

These variable expense percentages will be important when you sit down to calculate the potential financial advantages (i.e. profits) of hiring an associate. Once you know your variable overhead costs for office and clinical supplies (usually in the eight to nine per cent range), and other incremental overhead costs are clearly identified, it is relatively easy to see how the associate's production will impact your bottom line.

Playing With the Numbers

Now let's do the logistics planning for the associate. The incremental overhead costs will vary from practice to practice, but will likely include the following factors:

- Office and dental supplies (eight per cent of collections)
- Reserve funds. This includes the profit you set aside for things like equipment and facility upgrades (i.e. the maintenance of the business). At various intervals, you'll have to upgrade equipment — your sterilization and X-ray units, for example — to remain current in the delivery of dentistry. A certain percentage of your profit must be designated for investment purposes.
- Professional fees (such as the legal, accounting, and consulting fees) related to hiring an associ-

ate. These expenses will be highest in the first year, but must still be anticipated for years two and three.

- Facility improvements, such as adding operatories. These "asset" investments should be spread over five years.
- Additional staff. How many staff are needed to take care of the associate's side of the practice and what hours must they be available? For example, you'll need to hire an assistant and possibly a part-time receptionist to help out. As the associate gets busier and busier, you may need to hire a full-time receptionist. (Although this overhead will vary according to production, it will be a recurring expense.)
- Risk factor. How much will your own production drop off because you're now paying attention to the associate or transferring patients to him? Will the staff lack focus because they now have to worry about someone else? There may be an initial decrease in your personal net, even though overall production may increase. (Spread this risk factor out over the first two years.)
- Start up/marketing costs for the associate. These expenses will be highest in the first year, but may still be anticipated in years two and three.

As you can see in **Fig. 1**, we have estimated the incremental over-

heads for the first three years after bringing in an associate. We have projected that the total additional costs will be \$109,800 in year one, \$104,000 in year two and \$101,240 in year three. To figure out your actual annual revenue in the first year (before paying the associate), subtract the incremental expenses from the collection figure. The calculation would be: \$150,000 - \$109,800 = \$40,200. (The revenue for year two would be \$96,000 and \$148,760 for year three.)

Now that you know what your incremental overheads are, you can start playing with some numbers to determine the amount you can afford to pay the associate. As a starting point, remember that the percentage the associate takes is calculated on their collections less their lab fees. For example, let's say that the associate's annual collections in his first year are \$150,000 (after lab).

By looking at **Fig. 2**, you'll see what your net profit or loss would be for each year, depending on the percentage paid to the associate. If you paid the associate 25 per cent on collections in the first year (25 per cent of \$150,000), the associate would receive \$37,500. To determine your net loss/profit, subtract the associate's earnings and the expenses from the collection figure. (((\$150,000 - \$109,800) - \$37,500 = \$2,700.) However, if you paid your associate 40 per cent



of collections, you would find yourself at a loss for the first year. $((\$150,000 - \$109,800) - \$60,000 = -\$19,800)$.

Alternatively, you might offer the associate a guaranteed minimum base salary or a fixed percentage, whichever is the higher. For example, you could guarantee a \$4,000 monthly salary, but this would be considered a draw against future collections if the associate falls behind in production and does not meet the minimum production level.

The rule of thumb is to play with the numbers and the compensation percentage so that you reach a break-even point within one to two years. You may find that the initial period is not profitable, but it may provide you with relief (meets your psychological needs) at the same time as it builds up the practice goodwill. By going through this exercise and quantifying the real costs of hiring an associate, you'll enhance both your and the associate's understanding of the process. And if you learn by playing with these numbers that you're not taking home a percentage equal to the

TABLE II

	Associate Collection Net Of Lab	Expenses	Associate Compensation	Net Profit/Loss
Year One	150,000	109,800	25% = 37,500	2,700
	150,000	109,800	30% = 45,000	-4,800
	150,000	109,800	35% = 52,500	-12,300
	150,000	109,800	40% = 60,000	-19,800
Year Two	200,000	104,000	25% = 50,000	46,000
	200,000	104,000	30% = 60,000	36,000
	200,000	104,000	35% = 70,000	26,000
	200,000	104,000	40% = 80,000	16,000
Year Three	250,000	101,240	25% = 62,500	86,260
	250,000	101,240	30% = 75,000	73,760
	250,000	101,240	35% = 87,500	61,260
	250,000	101,240	40% = 100,000	48,760

associate, you'd better consider becoming an associate yourself.

Please note that the above figures will vary from practice to practice. Depending on your situation, some of the incremental overheads may not even exist. For example, if your facility is well set up for an associate, you may not need to do any enhancements. Similarly, your

existing staff may be well equipped to handle the associate's needs, in which case you may only need to hire an assistant. And if you have a mature staff and many patients, your risk factor may be negligible. Please be sure to review the above calculations with the appropriate advisors.

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JOURNAL

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1993
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No. 4



ALICE KHIEU

Dr Alice Khieu. Jeune diplômée de l'Université de Montréal, en chirurgie dentaire. Cliente de la Banque de Montréal depuis la fin de ses études en 1990, elle a d'abord obtenu un prêt pour l'achat d'une propriété, puis pour l'achat de sa clinique en 1991.

« Après mes études, j'ai été heureuse de trouver à la Banque de Montréal toute l'écoute et l'appui nécessaires pour lancer ma propre affaire. Ma clinique dentaire est une très petite entreprise avec trois employés et toute une clientèle à développer. J'ai dû rapidement établir une relation de confiance avec mes clients. La même relation s'est installée avec la Banque. Quand j'ai eu besoin d'un prêt commercial afin de moderniser ma clinique, on me l'a accordé. »

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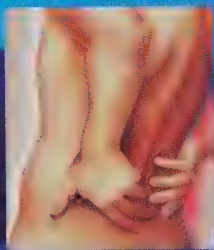
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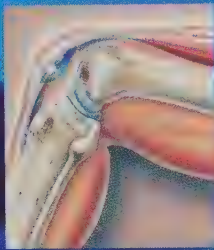
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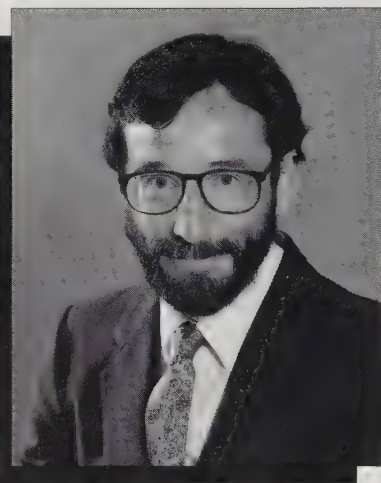
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The Debate Must Go On



Terence L. Davis, BA
Managing Editor

If infection control seems like an issue that won't go away, welcome to the '90s.

Ever since AIDS burst onto the scene in San Francisco, just over 11 years ago, public fear about the deadly disease has increased on a seemingly incremental scale. In response, the health care professions have developed strong infection control guidelines, and government has spent millions of dollars on research and public awareness campaigns.

Today, however, a few researchers are beginning to wonder if the public hysteria and the vast expenditures on AIDS research have been worth it, at least in the North American context. While the disease has ravaged many parts of Africa, it has not reached epidemic proportions here. Yes, it has had a major impact on both homosexual

men and intravenous drug users, but it has not gained a foothold in the general population.

But AIDS is still front-page news, and the furor created by the disease is unlikely to end soon. This may stem from the fact that no other malady has raised so many moral and human rights issues. Or it may have been created by the health care community itself, which adopted a whole new set of rules for dealing with AIDS. Public disclosure was an accepted infection control practice until AIDS arrived on the scene, and no other disease in recent memory has been kept so carefully hidden away behind closed doors.

The public outcry may also be due to the dichotomy of certainty and uncertainty that surrounds AIDS. Certainty, because there is no known cure for the disease. Everybody who contracts AIDS dies. And uncertainty, because HIV, the virus believed to cause AIDS, is unstable. To date, two strains of the virus have been identified, and researchers now believe that a third strain, which may have the potential to affect the general North American population, is coming.

Furthermore, despite everything that has been written and said about AIDS in the past 10 years, it seems as if a significant portion of the general public remains largely uninformed about how AIDS is transmitted. This lack of knowledge has bred fear, and fear sells newspapers.

It isn't surprising, then, that a recent research study on the potential for AIDS to be transmitted to patients via dental handpieces has raised such concern among both the public and the scientific community. Or that AIDS-related publicity has led to the development of stringent infection control guidelines by both the medical and dental professions.

Now, however, some researchers have begun to question the validity of these guidelines. To date, the views of these individuals remain outside the mainstream of scientific thought. Nevertheless, the

debate generated by their cry from the wilderness is healthy. It has forced the health care community to reexamine its infection control policies and defend them.

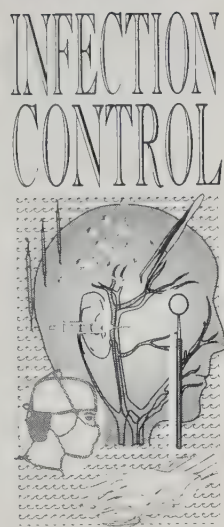
Throughout 1992, the *CDA Journal* participated in the debate by publishing a series of infection control articles by Dr. John Hardie. These articles were published despite the fact that they are not always in agreement with CDA's views on infection control. CDA continues to stand behind its present infection control guidelines. We firmly believe that these guidelines represent a reasonable, effective approach to universal precautions, which protects both patients and health care providers alike. We also believe that our infection control guidelines reflect the best scientific knowledge available today.

At the same time, CDA continues to believe that scientific debate is healthy and valuable. To that end, we have chosen to revisit the subject of infection control in this issue of the *Journal*. We've included two new articles on infection control, one by Dr. Hardie and one by Drs. Richard Mathias, Stephen Marion and Joel Epstein. This issue also contains the full text of the recently-released Health and Welfare Canada, Laboratory Centre For Disease Control (LCDC) report: "Blood-borne Pathogens in the Health Care Setting: Risk For Transmission." The report contains the consensus statements and recommendations reached at a series of infection control meetings that LCDC conducted with health care workers in 1991, which are remarkably similar to CDA's own guidelines.

We hope that you find these articles interesting and thought provoking. That is their sole intent.

(CDA's infection control guidelines are available free-of-charge to member dentists. To obtain your copy, please call Lisa Burke, CDA's manager, information services, at: 613-523-1770 or, toll free, 800-267-6354.)

Terence L. Davis, B.A.
Managing Editor



The Causation of Disease: HIV and AIDS.

Richard G. Mathias, MD, FRCPC

Stephen A. Marion, MD, MS, M.H.Sc., FRCPC

Joel B. Epstein, DMD, MSD

Recently, a few researchers have taken issue with the generally-accepted belief that the Human Immunodeficiency Virus (HIV) causes AIDS. This belief has been questioned by Dr. John Hardie in the *Journal of the Canadian Dental Association*.¹ Dr. Hardie reviewed a limited selection of the literature on AIDS, giving particular emphasis to those authors who argue that HIV has not been demonstrated to be the cause of AIDS and, therefore, that public health recommendations based on this assumption should not be made.

The papers reviewed by Dr. Hardie encompass only a small part of a literature on HIV/AIDS, which includes the 1,543 papers published in refereed journals since 1988 (as documented by the National Library of Medicine, U.S. Department of Health & Social Services). The essence of Dr. Hardie's argument is that there are still details about HIV infection and AIDS that are not fully explained by the currently-accepted theory, and that these details make the causal association of HIV and AIDS suspect.

However, while there are indeed some unknown details to be resolved, it does not follow that causation has not been adequately established or that action to prevent the spread of HIV should be delayed. We think that Dr. Hardie's review reveals some confusion

about how evidence is brought to bear in demonstrating causation, and about how the evidence of causation is used in decision making.

We infer causation when one event or action consistently results in another. This allows us to predict what will happen in various situations, and to arrange events to maximize or minimize the chances that it will occur.

The cause and effect relationship between specific events can be very simple or extremely complicated. Children experiment with events and their consequences every day. For example, the effects of gravitation if a bowl is pushed off the high chair, or the light that shines when a switch is turned on. Seeing the effect of gravitation requires no detailed knowledge of the theory of gravitation, just consistent evidence of a link between an action and a response. Similarly, recognizing the effect of turning on a light switch requires no detailed understanding of the theory of electromagnetism.

However, seeing a cause and effect relationship and understanding that relationship are two different things. The general issue of causation is often complex. In biology, we rarely, if ever, understand the total relationship of an action to an outcome. Causation must be viewed as an intricate web of events in which one or more pathways may lead to the same

effect. We also need to understand causation at different action levels. As Rothman states, one has to differentiate scientific and public health needs in inferring cause-effect relationships.²

Scientists seek a complete understanding of the complicated web of causation. Our theories tend to be incomplete, and in the end, as more evidence is gathered, may be disproved or modified. A theory that has been refined by new evidence is more complete in its explanation of events. For example, turning on a light switch does not always produce light, because the bulb may burn out. Nevertheless, we do not abandon our theory of a cause-effect relationship between turning on the switch and the production of light. Instead, we refine the theory by adding a condition: that the bulb must not be burned out. Other conditions have to be added as well: the wiring must be intact, the electricity must be on, etc., etc.

As public health policy makers, we take a practical view of causation.^{3,4} While we welcome valid refinements of a theory, we also recognize the need to act on current knowledge. We do not wait for complete understanding, but only for the answer to one very simple question: Will a specific action result in the anticipated event? For example, will implementing policies to curtail smoking result in reduced rates of lung cancer? If the

answer is yes, then for all practical purposes we are content to say that smoking causes lung cancer and to act on that assumption. A very small number of people still argue that because there are cases of lung cancer that are not caused by smoking (this is true), then smoking does not cause lung cancer (this is not true). Cigarette smoking is a cause of lung cancer, but not the only one. It has been estimated that about 83 per cent of lung cancer is caused by smoking. We do not have a complete understanding of the biological link between cigarette smoke and the cellular changes that result in lung cancer, but this does not invalidate the causal relationship between smoking and lung cancer.

To provide practical guidelines for establishing causality in the biological sciences, Hill⁶ advanced the following set of criteria: 1) strength of association; 2) consistency; 3) specificity; 4) temporality; 5) biologic gradient; 6) plausibility; 7) coherence; 8) experimental evidence; and 9) analogy. Of these, only temporality – the cause must come before the outcome – is an absolute requirement. Hill's final point in the discussion was that these criteria were only a guide and that not all of the criteria needed to be fulfilled before causation could be considered probable.

What, then, can be said about HIV and AIDS? The ultimate question that public policy makers must answer is: Will preventing HIV infection reduce AIDS? At this level, there is good evidence to suggest that reducing the presence of HIV antibody-positive blood in the blood supply has reduced post-transfusion AIDS.⁷ In addition, inactivating HIV in factor VIII concentrate has reduced the chances of AIDS in hemophiliacs.⁷ When infection does occur, it is usually possible to determine where the screening system broke down. This, in itself, is excellent evidence of causation. It also meets most of Hill's criteria (temporality, strength of association, biologic plausibility, specificity, and coherence).

Then there's the issue of children who are born HIV positive and subsequently develop AIDS.

Without fail, the mothers of these children are also HIV positive. Mothers with risk factors similar to the HIV-infected mothers, but without HIV infection, do not transmit HIV to their children. These HIV-negative offspring do not develop AIDS.

In fact, only about one-third of the children born to HIV-positive mothers are HIV positive themselves. This observation does not make the causal association between HIV and AIDS incorrect, however. Rather, it leads to efforts to define why this phenomenon occurs so that we can lower the rate of infection through intervention.⁸ The association of HIV and AIDS in these instances (posttransfusion, in hemophiliacs receiving factor concentrates, and perinatal, in children) is not explained by any other mechanism aside from HIV causing AIDS.

The so-called Florida case, where a patient was presumably infected with HIV during dental procedures – and subsequently developed AIDS – also suggests a connection between HIV and AIDS.⁹

But some ask: "Is this also true for sexual transmission?" The association of high rates of HIV infection in groups with high rates of AIDS is not by itself strong evidence. But when gay men, some with and some without HIV infections, are followed over time, we find that AIDS only occurs in the HIV-positive men.¹⁰ This provides very strong evidence – and meets the major criteria for causation – that HIV is the predominant cause of AIDS. The same findings are being made in Africa, in both sexes. People who are HIV positive go on to develop AIDS, while those who are not HIV infected do not. These findings are worldwide in nature.¹¹

One of the sources of potential confusion is that, because the association between being HIV positive and developing AIDS is so strong, the definition of AIDS has tended to change. Today, it is generally accepted that HIV infection must occur before the onset of AIDS. Making such a definition, however, does not rule out the existence of conditions very similar to AIDS that

are not caused by HIV infection. Such conditions likely do occur, but the epidemiological evidence indicates that when all such AIDS-like conditions and even AIDS itself are lumped together, the predominant cause of AIDS is still HIV infection.

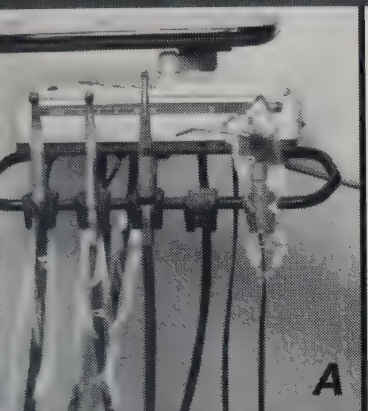
The conclusion that HIV causes AIDS is also supported by the effectiveness of the antiviral therapies that have been developed as the principal means of delaying the onset of AIDS in HIV-infected individuals, as well as for treating AIDS sufferers. The fact that the antiviral therapies designed to inhibit the growth of the HIV virus also reduce the manifestations of AIDS corroborates the viral hypothesis.

The evidence cited in Dr. Hardie's paper¹ comes from a very small number of the more than 1,500 papers published on HIV infection and AIDS. The authors cited by Dr. Hardie maintain that behavioral risk factors alone are the determinants of AIDS risk, and that this risk is not mediated through HIV infection. To support this claim, however, one would have to argue that the relevant risk factors were not present before 1980 – when AIDS was first reported – and that the occurrence of the risk factors is increasing as the numbers of AIDS cases increase. Neither of these arguments is consistent with the evidence obtained from behavioral observation.

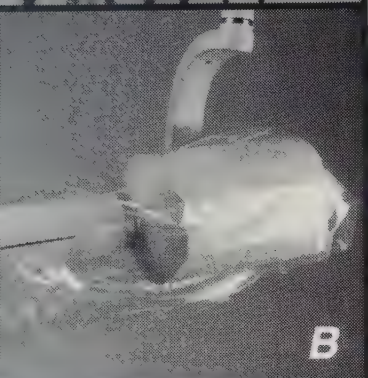
While the majority of the published evidence supports the theory that HIV causes AIDS, many details of this cause and effect relationship are complex and not well understood. Why, for example, is there such a long period between HIV infection and the development of AIDS?

It is important, here, to recognize the need to act on current knowledge. We do not "know" why there is such a long period between infection with mycobacterium tuberculosis and the development of pulmonary tuberculosis, but this has not stopped us from making a causal association. The observation that all events are not understood does not imply that the causation association of HIV and AIDS is not true. The infant ob-

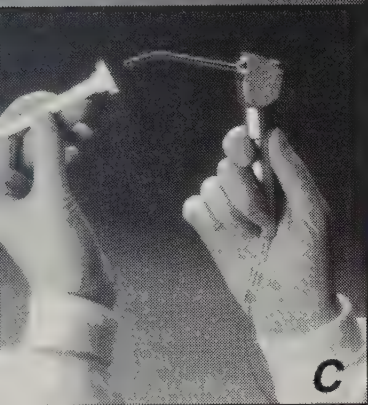
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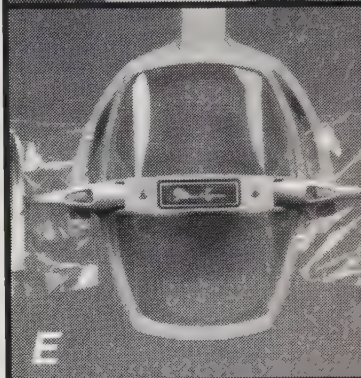
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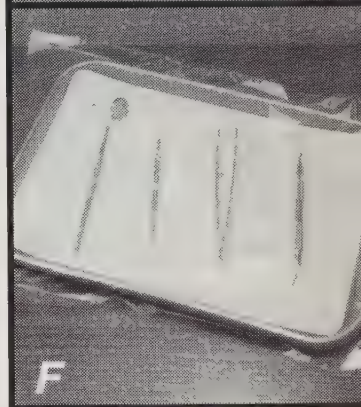
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serves and understands the practical aspects of gravitation, even though Stephen Hawking has difficulty in explaining just what this force is and how it operates.¹²

It can be useful to question scientific dogma, as scientific theory can only develop further if valid answers can be formulated in response to this questioning. However, Dr. Hardie's article challenging the causative link between HIV and AIDS¹ goes beyond posing questions about science. The author, in effect, argues that since there are still unanswered questions about HIV infection and AIDS, no public policy decisions based on the theory that HIV causes AIDS should be taken.

We strongly disagree. HIV is the predominant cause of almost all cases of AIDS-like illness, and reducing HIV infection will correspondingly reduce the numbers of AIDS cases. The evidence in support of these assertions is overwhelming. Taken from the all important perspective of developing sound public and personal health policies, HIV is the cause of AIDS. In the absence of a serious alternative hypothesis that offers public policy makers better avenues to attack the rapidly increasing number of AIDS cases, claiming that HIV does not cause AIDS is sophistry, dangerous and a public disservice.

Exploring and explaining the

events that determine HIV infection and the subsequent progression to AIDS will allow for the elucidation of the critical events in the causal web. In turn, this will allow public policy makers to focus on the most critical actions. As Hill⁵ stated: "All scientific work is incomplete – whether it be observational or experimental. All scientific work is liable to be upset or modified by advancing knowledge. That does not confer on us a freedom to ignore the knowledge we already have, or to postpone action that it appears to demand at a given time."

The observation that HIV causes AIDS has sufficient strength to indicate that immediate action is needed to prevent HIV infection and hence prevent AIDS. ■

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References:

1. Hardie, J. Does HIV cause Aids? A review. *J Can Dent Assoc* 58:721-28,

1992.

2. Rothman, K.J. Causal inference in epidemiology. In: *Modern Epidemiology*. Rothman, K.L., ed, Little Brown & Co, 1986, pp. 7-22.

3. Rothman, K.J. and Poole, C. Science and policy making. *Am J Public Health* 75:340-341, 1985.

4. Lanes, S. Causal inference is not a matter of science. *Am J Epidemiol* 122:550, 1985.

5. The health consequences of smoking: cancer. A report of the Surgeon General, Washington, D.C. U.S. Department of Health & Human Services, Public Health Office on Smoking and Health, DHHS Publication No. (PHS) 82-50179, 1982.

6. Hill, A.B. The environment and disease: association or causation. *Proc R Soc Med* 58:295-300, 1965.

7. Surveillance Update: AIDS in Canada. HIV/AIDS Div., Bureau of Communicable Disease Epidemiology, LCDC. Quarterly Report. Oct. 1992.

8. Van de Perre, P., Lepage, P., Homsy, J. et al. Mother-to-infant transmission of Human Immunodeficiency virus by breast milk: presumed innocent or presumed guilty? *CI Infect Dis* 15:502-7, 1992.

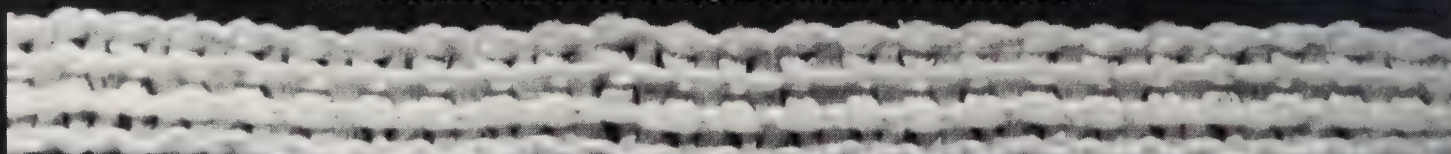
9. Transmission of HIV infection during invasive dental procedures – Florida. *MMWR* 40:377-81, 1991.

10. Schechter, M.T., Craib, K.J.P., Gelman, K.A. et al. HIV-1 and The etiology of AIDS. *Lancet* 341: 658-659, 1993.

11. Mann, J.M. AIDS – the second decade: a global perspective. *J Infect Dis* 165:245-50, 1992.

12. Hawking, S.W. A brief history of time: from the big bang to black holes, 1988, Bantam Books, p. 70.

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Handpiece Sterilization – The Debate Continues

John Hardie, BDS, M.Sc., FRCD(C)

Introduction

In spite of the lack of any supportive clinical evidence, a number of authoritative organizations have stated that dental handpieces must be heat sterilized. As anticipated, this controversial order has created (at least) two distinct schools of thought. One school finds it professionally acceptable to follow mandated and empirical actions to achieve public appeasement, while the other believes that dental practice should be governed by a demonstrable cause and effect relationship.

In light of the continuing debate within the dental profession on handpiece sterilization, the validity of both approaches will be reviewed in this article.

Historical Review

As early as 1956,¹ and increasingly during the 1970s,^{2,3} concerns were raised that hepatitis B could be transmitted to patients during dental treatment or from dental equipment. From 1963 until 1982, reports have appeared implicating dental water and/or air sprays,⁴ dental unit water lines,⁵ and handpieces⁶ as sources of potential bacterial contamination.

While it is true that there are numerous foci where cross infection could occur during routine dental care, the public, the media, and organized dentistry did not respond – at least until the late 1980s – to these findings. Was this simply an oversight, or was it a reflection of the fact that, as Lewis has made clear,⁷ not one case of dental

equipment-mediated infection has been confirmed or reported in the literature?

It is possible that the general good health of most dental patients, the non-sterile environment of the oral cavity, and the relatively non-invasive nature of many dental procedures are not conducive to equipment-mediated transmissions. Or, as suggested by Lewis,⁸ the answer may be that retrospective studies, by their design, have failed to reveal the significance of dental equipment in the transmission of hepatitis B. However, 1980 findings tend to refute this latter hypothesis.

In 1980, the Centers for Disease Control (CDC)⁹ received details on 13,159 cases of physician-diagnosed hepatitis A. Of these patients, 1,874 (14.2 per cent) had received dental treatment up to six months before the onset of the clinical symptoms. Hepatitis A has an incubation period of 15 to 50 days. It is unlikely, given the mode of transmission of hepatitis A, that the virus could be transmitted during dental treatment, from dental equipment, or from surfaces in the dental operatory. Thus, the 14.2 per cent figure represents patients who shared a non-contributory but not uncommon activity, i.e. attending the dentist.

During the same year, 8,184 cases of physician-diagnosed hepatitis B were reported to CDC.⁹ Among these patients, 1,157 (14.1 per cent) had received dental treatment up to six months before the onset of clinical symptoms. The incubation period for hepatitis B is 45

to 180 days.

It should be appreciated that hepatitis B, due to its presence in blood and saliva, is a model for the study of infectious disease transmission in dentistry. Minimal infection control techniques were practised in 1980, and these certainly did not include the heat sterilization of dental handpieces. Therefore, if hepatitis B is spread via dental treatment, considerably more of the 8,184 individuals diagnosed with the virus in 1980 should have had a history of recent dental treatment as compared to those individuals infected with hepatitis A. The fact that recent dental care was received by fewer hepatitis B patients (14.1 per cent) than hepatitis A patients (14.2 per cent) goes against the belief that dental treatment, dental equipment (i.e. handpieces), and dental operatory surfaces are vectors for the transmission of hepatitis B. Interestingly, in 1980, Sims,¹⁰ after having conducted an extensive review of hepatitis B spread from dental practise, arrived at the conclusion that there is: "a tendency to exaggerate the risks and create unjustified alarm where this disease is concerned."

It is true that there are documented cases of hepatitis B having been acquired as an apparent consequence of dental treatment. However, this fact alone does not disprove the theory that dental instruments, nasopharyngeal secretions and aerosols do not spread hepatitis B.¹¹

In the early 1980s,⁹ it became obvious that the most significant

criterion in assessing the potential for hepatitis B to be transmitted to dental patients was not the sterility or non-sterility of the handpiece, but rather the infectious status of the attending dentist. Studies by Ahtone and his colleagues⁹ revealed that the common factor in cases of patient-acquired hepatitis B was the presence of hepatitis B surface antigen and/or hepatitis B e antigen in the serum of the involved dentist. (These blood markers indicate a high potential for infectivity.) Viewed in conjunction with the hepatitis A and B infection figures for 1980, these findings provide proof that the route of transmission for hepatitis B is via contact between an infected dentist's blood and the mouths of patients, and not due to contact with a reused prophylaxis angle, as suggested by Lewis.⁸ It is therefore naive to assume that the heat sterilization of handpieces would prevent the transmission of hepatitis B from an infected dentist to patients.

Over the years, the epidemiology of hepatitis B has become better defined. In their 1992 text, Shulman and his colleagues¹² state that the transmission of hepatitis B requires an overt inoculation of infected blood or intimate sexual contact. (In this context overt means open or direct, and not via a secondary route such as a handpiece.) Therefore, it makes sense that the infected dentist—not dental instruments—is the route via which hepatitis B is transmitted to patients.

Another way to look at the role of dental equipment in the transmission of hepatitis B is to consider the individuals who are diagnosed with hepatitis B. According to Shulman et al,¹² individuals at high risk for acquiring hepatitis B are intravenous drug abusers, transfused patients, hemophiliacs, and health care workers (all of whom share the risk of receiving overt inoculations of infected blood), as well as male homosexuals and promiscuous individuals (via intimate sexual contact.)

In North America, hepatitis B is a disease of young adulthood, with the incidence rate peaking among 25 to 29 year olds.¹³ These facts are

not compatible with the premise that hepatitis B is spread via dental handpieces, since under such circumstances all societal and age groups would be involved.

The evidence presented in this review indicates that it is impossible to substantiate the claim that dental handpieces transmit infectious diseases. On the contrary, the facts show that the most likely source of disease transmission in the dental office is the infected dentist. Current concerns should be considered with this concept in mind.

Current Concerns and Comments

Since its recognition in 1982, the acquired immunodeficiency syndrome (AIDS) has generated considerable controversy and debate. For better or worse, the syndrome has influenced social behavior, public policy, and health care practice. Its most dramatic effect in dentistry has been an almost ritualistic adherence to increasingly complex and expensive infection control protocols. However, when two factors are considered, it is perhaps understandable that this should have occurred.

Obviously, the first factor was the apparently inevitable fatal outcome of the syndrome. (It is important to note that hepatitis B is also a fatal disease, and that it is estimated to cause one to two million deaths per year worldwide.¹² At least 250 U.S. citizens¹⁴ die of acute fulminant hepatitis B each year.)

The second factor was the early appreciation that AIDS occurred in the same risk groups and probably by similar transmission routes as hepatitis B. Therefore, it is not surprising that the initial emotions of fear, anxiety, and ignorance should be accompanied by a perceived need by dental staff to take precautions in excess of what they were currently practising. In the mid 1980s, dental authorities responded to this need by recommending protocols similar to those that had previously been suggested for hepatitis B. Interestingly, despite being a fatal disease with some documented examples of

dentally-acquired transmissions, hepatitis B has never generated the same concern among dental staff, the media, and patients as AIDS.

Since 1982, when the first cases of AIDS were reported, a great deal of information has become known about the condition. This knowledge must be considered in any evaluation of the ability of dental handpieces to transmit AIDS. A convenient and logical method of doing this is to compare and contrast AIDS with hepatitis B.

AIDS and Hepatitis B

In North America, AIDS and hepatitis B occur among the same high risk groups, i.e. homosexual/bisexual males and intravenous drug abusers. The incidence rate for AIDS peaks at between 30 and 39 years of age,¹⁵ or approximately 10 years later than it does for hepatitis B. Both diseases are transmitted via direct inoculation with infected blood or by intimate sexual contact.

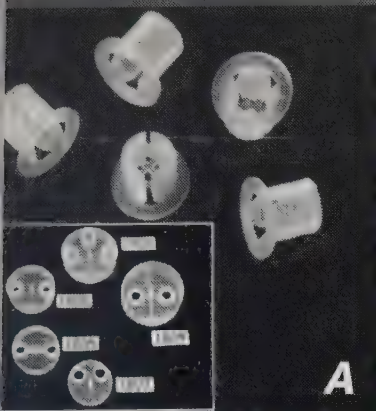
Hepatitis B is caused by the hepatitis B virus (HBV). After smoking, HBV is the second most common human carcinogen.¹² HBV is a DNA virus which can survive storage at room temperature for six months,¹² but is destroyed by a 10-minute exposure to household bleach and by most intermediate-level disinfectants.¹⁶

Most, but not all, authorities consider the human immunodeficiency virus (HIV) to be the cause of AIDS. HIV is a RNA retrovirus. Unlike HBV, it is a fragile virus that is destroyed by low level disinfectants.¹⁶ HIV is considered to be 40 times less pathogenic than HBV,¹⁷ which is mirrored by the fact that the titre of HIV in blood varies from 10^1 to 10^3 particles per mL, compared to titres of 10^6 to 10^9 particles per mL for HBV.¹⁸

Both HIV and HBV occur in saliva. However, saliva is not considered to be a vehicle for HIV transmission,¹⁹ whereas it is more likely to be one for HBV. Both HIV and HBV are blood-borne pathogens and not airborne pathogens. As such, neither are considered to be transmitted by aerosols.

Thus, while HIV and HBV do have some similarities, HIV is less

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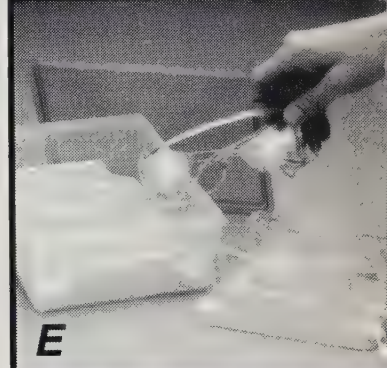
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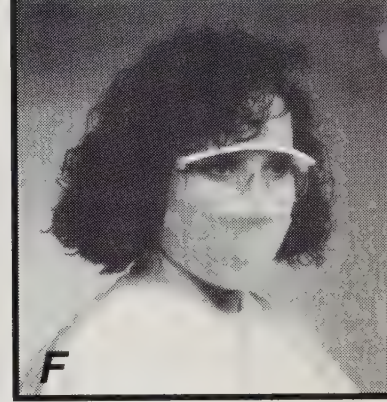
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pathogenic and much easier to destroy than HBV. Consequently, it is logical to assume that the ability of HIV to be transmitted to patients via dental instruments and handpieces is considerably less (perhaps 40 times less) than that of HBV. And, as previously described, the transmission of HBV to patients via dental equipment and handpieces is in itself an unlikely event.

The inefficiency of dental instrument-mediated transmission of HIV can also be assessed by considering the casual spread of HIV and the so-called Florida case.

Causal Spread

Since 1984, worldwide studies^{20,21} of the families and close personal contacts of people dying with AIDS have established that AIDS is not acquired through sharing eating utensils, bathing facilities, toilets, bed linens, pens, or typewriters with AIDS victims. Nor is HIV transmitted by hugging or kissing an AIDS patient, nor by removing their blood- or feces-soaked gar-

ments. These examples illustrate the low virulence of HIV, which is a significant characteristic of the virus in the domestic and dental environments.

The Florida Case

In the summer of 1990, CDC²² released information implying that a patient had contracted HIV while attending a Florida dental practice. This news created a torrent of publicity and concern regarding the potential for HIV transmission during dental treatment. Fortunately, in 1992 the U.S. government²³ published a detailed analysis and interpretation of what has become known as "the Florida case." The findings state that:

- this is the only known case of patients acquiring an HIV infection while undergoing dental treatment.
- the attending dentist was HIV positive and had AIDS.
- the route of transmission is not known, but was most likely through direct contact with the dentist's blood.

- the case does little to identify high-risk medical and/or dental activities for the transmission of HIV.

These conclusions are significant for three reasons: the dentist involved in the case was infected with HIV; the dentist's blood was considered to be the most likely route of transmission; and dental instruments, including handpieces, were discounted as possible vectors of HIV spread.

In other words, if the dentist had not been infected, then neither would the patients. This situation is exactly analogous to the experience of HBV transmission from dentist to patient. HIV and HBV are spread by infected dentists, not by contaminated handpieces.

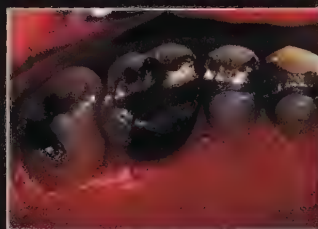
However, the significance of this concept was diminished, recently, by a 1992 article on dental handpieces.

Dental Handpieces

In 1992, Lewis and Boe published "Cross Infection Risks Associated with Current Procedures for

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Using High-Speed Dental Handpieces.⁴⁷ Lewis²⁴ subsequently admitted that this study was "limited to laboratory experiments with bacteria or extrapolations from dye studies." In other words, the investigation was not performed in a clinical setting and did not involve either HBV or HIV. In spite of this, and with the full realization that "there is no evidence that confirms cross-contamination via the handpiece,"²⁵ reputable authorities such as the Academy of General Dentistry, the American Dental Association, and the Centers for Disease Control declared that dental handpieces must be heat sterilized between patients. Their action begs the question: Was this response based on a reasoned assessment of all available facts, or was it simply an act of political expediency?

The answer requires at least some knowledge of research methodology and the value of current scientific publications. According to information published in a 1986 *Annals of Internal Medicine* arti-

cle,²⁶ and reemphasized in a 1992 paper that appeared in the *Journal of Oral Maxillofacial Surgery*,²⁷ most of what is published in clinical journals either has no direct bearing on clinical practice, or the study was not advanced or sound enough to justify clinical action.

As recently stated by health and science reporter Daniel S. Greenberg:²⁸ "Now, any scrap of new scientific information that's published is immediately delivered to the public with all the trappings of scientific certitude." This was certainly the case with Lewis' first 1992 study.⁷ On January 27, 1992, the Calgary *Herald* voiced the opinion that "Dirty dental handpieces spread diseases, study says," while the Ottawa *Citizen* claimed that "Researcher links dirty dental drills to AIDS, hepatitis B infections."

This occurred despite the fact that Lewis' research was nonclinical and did not involve HIV or HBV. In addition, it was observational, uncontrolled, and non-ran-

domized. All of these features, according to Wagner and Wagner,²⁷ are characteristic of a weak research design. Indeed, they believe that clinicians should only draw practical applications from studies that specifically involve human subjects.²⁷

Traditionally, before basic research findings are converted to the clinical arena, they are subjected to review, confirmation, and analysis of their short- and long-term effects.²⁸ That a number of authoritative medical and dental organizations failed to do this prior to issuing a categorical proclamation on handpieces suggests that they perceived the public to be more willing to accept media hyperbole than a reasoned, scientific and professional approach to an initial, nonclinical research finding. Of course, once made, such a decision is embarrassing to retract, which may be why no official comment has been made on the Mills' investigation. In July 1992, Mills and co-workers²⁹ reported on a

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clinical study involving 20 handpieces and 31 patients. Half of the handpieces were subjected to heat sterilization, and half to surface disinfection using a 1:213 dilution of iodophor. No microbial growth was found from the turbine assemblies of either the sterilized or the surface-disinfected handpieces. Such results do not please the proponents of handpiece sterilization. Neither does the recent Clinical Research Associates³⁰ statement that: "Unfortunately, all handpieces on the current market are eventually affected adversely by routine heat sterilization."

No matter how many self-righteous qualifiers are used to justify their actions, the inevitable conclusion is that some dental and medical organizations ignored their professional responsibilities by responding prematurely to initial research findings, which have yet to withstand the rigors of scientific and clinical scrutiny.

Dr. L. Liebsohn, then the president of the Academy of General

Dentistry (AGD), recognized the need for further study in February 1992 when he said: "I'd like to see the scientific community evaluate Dr. Lewis's study and conduct further research on the transmission of viruses through a handpiece so that we can begin to gather more definitive data before we change the guidelines."³¹ Yet, less than five months later, without reviewing any further investigations, AGD adopted a policy recommending heat sterilization of handpieces. The failure of the AGD and other organizations to request or fund additional basic and clinical studies to validate or repudiate Lewis's original findings is an insult to the biologic foundations of the dental profession.

In his recent philosophical treatise on reason, J.R. Saul³² states that modern technocrats exercise their power using "neither morality nor common sense." Perhaps the leaders of AGD and the other organizations recommending the heat sterilization of handpieces decided to

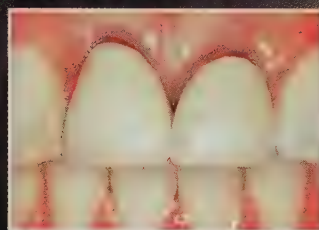
take the moral high ground by protecting the public's health. However, common sense would seem to dictate that protection should not be provided unless there is a clearly-established need for it and a suitable, effective method of protection is available. After all, there is still no evidence that confirms cross-contamination via the handpiece.

On reviewing the epidemiology and transmission of hepatitis B and AIDS, there are no facts to suggest that they are being transmitted by dental handpieces. To suggest otherwise – by mandating handpiece sterilization – is morally unjustified, a return to professional empiricism, and the hallmark of political expediency.

According to Wagner,²⁷ "Even the best and most highly respected journals provide incomplete protection from error and bias." This view should be respected, particularly with regard to the fall 1992 publication by Lewis and coworkers in *Lancet*.²⁴ By including an HIV

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negative hygienist, an HIV positive patient, and an AIDS patient, Lewis purports that his research constituted a clinical investigation. However, testing dental handpieces by running non-serrated metal shafts (instead of dental burs) across bloody tooth surfaces is hardly an example of normal clinical practice. In addition, a detergent rather than a recommended surface disinfectant was used to clean handpieces and prophy angles prior to microbiologic sampling. A properly controlled experiment would have included handpieces and prophy angles that were subjected to: a) only physical cleaning of external surfaces; b) external disinfection by a number of chemicals; and c) sterilization. In fact, while none of the handpieces and prophy angles involved in the "clinical trials" were subjected to sterilization, the investigation still concluded that such equipment should be sterilized. The clinical trials on handpieces do not appear to have been controlled, as they were apparently

only conducted on the HIV-positive and the AIDS patient. Nor is there any indication of how often the trials were repeated.

The presence of HIV within the handpieces and prophy angles was determined using the polymerase chain reaction (PCR). PCR testing is notoriously subject to extraneous laboratory contamination, is designed to identify minute amounts of a virus, and must not be construed as determining the infectivity of any residual virus. The PCR testing identified HIV only in the handpiece used on the AIDS patient, and only in "non-sealed" prophy angles used on the AIDS patient. The authors do not discuss the clinical relevance of these findings.

This investigation did include a laboratory study on HBV contamination of handpieces. However, it does not simulate normal operating procedures, and as such has no relevance to clinical practice. In a laboratory experiment designed to assess whether viruses survive in-

side high-speed handpieces, Lewis and his colleagues determined that even sterilization of the handpiece did not prevent viruses from being exhausted from handpieces connected to contaminated hoses. Based on this result, they stated that even when sterilized handpieces are used, patients may still be exposed to pathogens emanating from dental units, which in turn contaminate the surrounding environment. On this basis, it may be facetiously argued that, in addition to mandatory handpiece sterilization, all dental units must be replaced between patients.

The latest investigation by Lewis and his colleagues has a number of design faults, has failed to prove that handpieces transmit disease, and should not be used to promote mandatory handpiece sterilization.

Conclusions

In 1991,³³ Laskin said: "As providers of service to the public, we need to be able to validate every aspect of our clinical prac-

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tice. We owe it to our patients to see that those procedures we do and those therapies we use have a basis in fact and not in empiricism." He must be dismayed by the current recommendations regarding the heat sterilization of handpieces, which – to date – have satisfied none of his stated criteria.

Why have the leaders of organized dentistry ignored Laskin's advice? Perhaps the answer can be found in an editorial that appeared in the December 1992 *Journal of the Canadian Dental Association*.³⁴ The editor implied that while patients trust their dentists and wish to be informed by them, dentists would rather have patients receive information on dentistry via the media. If this is true, the handpiece legislation – designed to obtain immediate public appeasement – can be viewed as a predictable, albeit empirical, response to a media-generated concern.

However, the trust that has developed between patients and the dental profession has not occurred secondhand, via the media. Instead, it has evolved on an individual basis through the efforts of practitioners who have diligently and patiently destroyed the historical myths associated with dentistry, while offering knowledgeable and balanced perspectives on modern dental care. The reputation and standards of the profession will be eroded if dentists forgo this necessary responsibility simply because it is time consuming and frustrating to educate patients who have been exposed to media hyperbole and misperception.

Accordingly, since there is no evidence to suggest its necessity, it is recommended that mandatory handpiece sterilization be discontinued, and that organized dentistry fund projects to determine if the sterilization of dental handpieces actually limits the spread of infectious diseases. Until this occurs, colleagues and organizations who are prepared to accept empirically-mandated standards of practice are performing a disservice to patients, themselves, and the profession. A profession that is proud of its scientific and biologic foundations. ■

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References

1. Foley, F.E. and Gutheim, R.N. Serum hepatitis following dental procedures: presentation of 15 cases including three fatalities. *Arch Int Med* 45:369, 1956.
2. Levin, M.L., Maddrey, W.C. and Wands, J.R. Hepatitis B transmission by dentists. *JAMA* 228:1139-1140, 1974.
3. Rimland, D., Parkin, W.E., and Miller, G.B. Hepatitis B outbreak traced to an oral surgeon. *N Engl J Med* 296:953-958, 1977.
4. Blake, G.C. The incidence and control of bacterial infection in dental spray reservoirs. *Br Dent J* 115:413-420, 1963.
5. Abel, L.C., Miller, R.L. and Misik, R.E. Studies on dental microbiology: IV Bacterial Contamination of water delivered by dental units. *J Dent Res* 50:1567-1569, 1971.
6. Scheid, R.C., Kim, C.K. and Bright, J.S. Reduction of microbes in handpieces by flushing before use. *JADA* 105:658-660, 1982.
7. Lewis, D.L. and Boe, R.K. Cross-Infection Risks Associated with Current Procedures for Using High-Speed Dental Handpieces. *J Clin Microbiol* 30:401-406, 1992.
8. Lewis, D.L. Letter to Editor. *J Canad Dent Assoc* 58:688-689, 1992.
9. Ahtone, J. and Goodman, R.A. Hepatitis B and dental personnel: transmission to patients and prevention issues. *JADA* 106:219-222, 1983.
10. Sims, W. The problem of cross-infection in dental surgery with particular reference to serum hepatitis. *J of Dentistry* 8:20-26, 1980.
11. Goldstein, J., Morse, K. and Gullen, W. Epidemiology of Hepatitis B Among Endodontists. *J of Endodontics* 4:336-339, 1978.
12. Shulman, S.T., Phair, J.P., Sommers, H.M. *The Biologic and Clinical Basis of Infectious Diseases*. 4th Edition, W.B. Saunders, Toronto, 1992.
13. Krahn, M.D., Detsky, A.S. Universal hepatitis B vaccination: the economics of prevention. *Can Med Assoc J* 146:19-21, 1992.
14. C.D.C. Protection Against Viral Hepatitis. Recommendations of the Immunization Practices Advisory Committee (ACIP) *MMWR* 39 (No RR-2), 1990.
15. Health and Welfare Canada, Quarterly Surveillance Update: AIDS in Canada, October 1992.
16. Code of Practice for the Management of Biomedical Waste in Canada. Canadian Standards Association, January 1990.
17. Samaranayake, L.P., Scheutz, F. and Cottone, J.A. *Infection Control for the Dental Team*. Munksgaard, Copenhagen, 1991.
18. Hadley, W.K. Infection of the health care worker by HIV and other blood-borne viruses. *Am J of Hosp Pharm* 46(Suppl 3):S4-S7, 1989.
19. Barr, C.E., Miller, L.K. and Lopez, M.R. Recovery of Infectious HIV-1 from Whole Saliva. Blood proves more likely transmitter. *JADA* 123:37-45, 1992.
20. Gershon, R.R.M., Vlanhov, D. and Nelson, K.E. The risk of transmission of HIV-1 through non-percutaneous non-sexual modes - a review. *AIDS* 4:645-650, 1990.
21. Friedland, G., Kahl, P. and Saltzman, B. Additional evidence for lack of transmission of HIV infection by close interpersonal (casual) contact. *AIDS* 4:639-644, 1990.
22. CDC. Possible Transmission of Human Immunodeficiency Virus to a Patient during an Invasive Dental Procedure. *MMWR* 39:No. 29, 489-493, 1990.
23. United States General Accounting Office, Program Evaluation and Methodology Division, B-249339. AIDS: CDC's Investigation of HIV Transmission by a Dentist, September 1992.
24. Lewis, D.L., Arens, M. and Appelton, S.S. Cross-contamination potential with dental equipment. *The Lancet* 340:1252-1254, 1992.
25. Academy of General Dentistry, *Dental News*, San Antonio, Texas, July 22, 1992.
26. Haynes, R.B., McKibbin, K.A. and Fitzgerald, D. How to keep up with the literature: I. Why try to keep up and how to get started. *Ann Intern Med* 105:149, 1986.
27. Wagner, J.D. and Wagner, S.A. Keeping Abreast of the Medical/Dental Literature. A Simplified Approach. *J Oral Maxillofac Surg*, 50:163-168, 1992.
28. Greenberg, D.S. Healthy Skepticism, *The Vancouver Sun*, November 13, 1992.
29. Mills, S., Kuehne, J. and Bradley, D. Microbial Contamination of High-Speed Handpiece Turbines. *J of Dental Research* 72(IADR Abstracts):579, 1992.
30. Clinical Research Associates Subject: Handpiece Sterilization Report and Survey Results 16(6) June, 1992.
31. Can hand pieces transmit disease. *Dental Office* 11(6):11, 1992.
32. Saul, J.R. *Voltaire's Bastards*. Viking, Toronto, 1992.
33. Laskin, D.M. Reading between the lines. *J Oral Maxillofac Surg* 49:1, 1991.
34. Crawford, P.R. Say it ain't so. Editorial. *J Canad Dent Assoc* 58(11):867, 1992.



Bloodborne Pathogens in the Health Care Setting: Risk For Transmission

In April 1991, CDA hosted a historic conference on the "The Impact of HIV and Other Infectious Agents On Oral Health Care." The conference, which was generously supported by Canada's Laboratory Centre for Disease Control, was part of a series of meetings organized by Health and Welfare Canada to establish a consensus position on appropriate infection control guidelines for health care workers. Last December, Health and Welfare Canada published a full report of the statements and recommendations developed at these meetings in the *Canada Communicable Disease Report* (Vol. 18-24: 177-184, 1992.) In the interest of keeping the dental profession informed about the latest developments in infection control, the *Journal* has reproduced the complete text of the report in the following pages:

I. Introduction

Concerns about the risk for transmission of hepatitis B and human immunodeficiency viruses in the health care setting led to a series of meetings, beginning in December 1991, organized by the Laboratory Centre for Disease Control, Health and Welfare Canada. The purpose of these forums was to define areas of consensus among interested Canadian groups on issues related to transmission of bloodborne pathogens including hepatitis B virus (HBV) and the human immunodeficiency virus (HIV) from health care workers to patients/clients in

a health care setting. It was accepted that similar recommendations would apply to the testing, disclosure and management of patients. Although data are lacking on the risks of transmission of hepatitis C and non-HIV human lymphotropic viruses in the health care setting, the approach to other bloodborne viruses is expected to be similar to that for HBV and HIV.

The subject areas discussed at these meetings were as follows:

- HBV/HIV testing of health care workers
- Infection control guidelines
- Compliance with infection control procedures by health care workers
- Training of health care workers in principles and practices of infection control
- HBV- and HIV-positive health care workers and the risk of transmission in the health care setting
- Clinical management of health care workers pre- and post-exposure
- Assessment of HBV- and HIV-seropositive health care workers
- Assessment of invasive procedures performed by HBV- or HIV-infected health care workers
- Disclosure of an infected health care worker's status
- Public education

Participants^a represented a wide range of Canadian organizations concerned about health

care, ethics in medicine, and Canadian law as it applies to such issues.

Statements and recommendations emerging from these discussions reflect a consensus based on current knowledge; however, a spectrum of opinion was expressed in most subject areas. These recommendations are subject to change through results of on-going study and research. This document is intended to serve as a guide for those who employ, educate, license and legislate health care workers in Canada.

In the following recommendations, "significant exposure" is defined as an injury during which one person's blood or other high-risk body fluid^b comes in contact with someone else's body cavity; subcutaneous tissue; or non-intact, chapped or abraded skin or mucous membrane. In this context, an instrument contaminated with the health care worker's blood or the dripping of blood may be the mechanism by which a significant exposure occurs; a glove tear or perforation by itself is not regarded as a significant exposure.

II. HBV and HIV Testing of Health Care Workers

Statement

Programs for testing health care workers for HBV and HIV infection must be based on scientific principles, must consider ethical issues and legal precedents, and must be sensitive to the public needs. There is currently no legis-

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lation in Canada that specifically addresses the condition(s) under which testing of health care workers for HBV or HIV is warranted.

The participants of the meetings felt that a mandatory testing program for health care workers would not materially change the already extremely low risk for patients to acquire HBV or HIV infection in health care settings. In view of the risk, mandatory testing would be an unjustified measure that would violate the rights of individual privacy, and could result in acts of discrimination. The existence of such a testing program would likely have a major negative influence on the delivery of service and the training of health care workers in proper infection control practices because it would use scarce resources currently devoted to these high priority activities. There is also no scientific consensus on how often testing should be repeated if such a program were initiated.

Recommendations

1. Mandatory testing of health care workers is not justified based on current scientific evidence.
2. Health care workers who have had a previous significant exposure or who have personal risk factors (e.g., high-risk sexual practices, IV drug use) should be encouraged to voluntarily seek HBV and HIV testing. Voluntary testing of health care workers who have no personal risk factors, based on perceived or potential occupational risk for transmitting HBV or HIV (e.g., persons performing invasive procedures), is not recommended.
3. Following a significant exposure to a patient's blood or other high-risk body fluid, voluntary testing of health care workers is recommended if:
 - a) the source patient is known to be infected with HBV or HIV;
 - b) epidemiological evidence suggests possible infection (e.g., high-risk sexual practices, IV drug use);
 - c) the source patient is unknown or is unable to consent to or refuses testing.
4. Health care workers have a moral and ethical obligation to be

tested following a significant exposure by a patient to a health care worker's blood or high-risk body fluid if the health care worker's serological status is unknown. (See section X, Recommendation 2).

III. Infection Control Guidelines

Statement

Universal precautions were first introduced in Canada in 1987¹ in response to concern about occupational/nosocomial transmission of HBV/HIV from percutaneous exposures. Universal precautions are specifically intended to prevent transmission of bloodborne pathogens from patients to health care workers; however, they must be used in conjunction with traditional infection control systems for confirmed or suspected infections.² Another established system, body substance isolation,³ replaces traditional isolation systems, with the exception of airborne infections. Neither universal precautions nor body substance isolation recommend extra labelling of specimens or patients to identify them as requiring special care because of their potential risk for transmitting infection.

The blurring of distinctions between universal precautions and body substance isolation has led to an inconsistent application of terms and principles. Consistent use of both terms associated with promotion of a standard definition of practice would enhance understanding of the basic differences and improve the consistent application of appropriate terms and principles.

Recommendations

1. Universal precautions should be regarded as the minimum standard of practice for preventing transmission of bloodborne pathogens in all health care settings. Universal precautions must be clearly and consistently defined wherever they are described.
2. Current Laboratory Centre for Disease Control (LCDC) guidelines for universal precautions should be compiled in one document, revised and expanded in content. They should be based on

current results of risk benefit studies and research findings and be organized in such a way as to facilitate adaptation to the specific needs of users. LCDC should assume a leadership role in the promotion of these guidelines to users, including professional associations, health organizations, health care facilities, and educators.

3. Health care settings (including institutions, private offices and clinics, and first-line responders) and mortuaries should have written documents that describe infection control strategies in their specific areas and outline procedures for situations where there is risk of significant exposure to blood or other high-risk body fluids. Such policies and procedures should be developed in consultation with appropriate experts.

4. Strategies for preventing transmission of bloodborne pathogens should be reviewed as new information becomes available and reevaluated as to their effectiveness.

IV. Compliance With Infection Control Procedures By Health Care Workers

Statement

Currently available information indicates that the risk for transmitting disease with contaminated blood from an infected worker to a patient is very small when health care workers adhere to recommended infection control procedures. Mechanisms for assessing and improving compliance can be developed by implementation of standards against which compliance is measured. However, enforcement of compliance with these infection control procedures, including universal precautions, is difficult.

In health care facilities, internal quality assurance/risk management programs can be used to evaluate compliance with recommended infection control procedures. External accreditation councils can assist in this process. Although assessment of compliance is more difficult in independent settings, internal audits, clinical appraisals and on-site inspections exemplify methods that could be employed.

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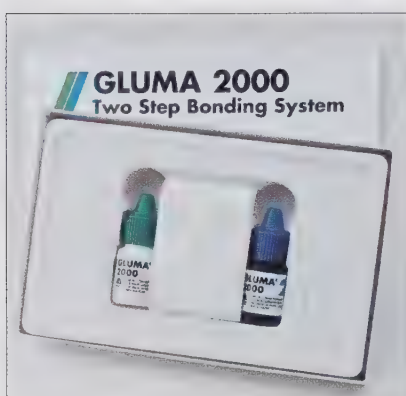
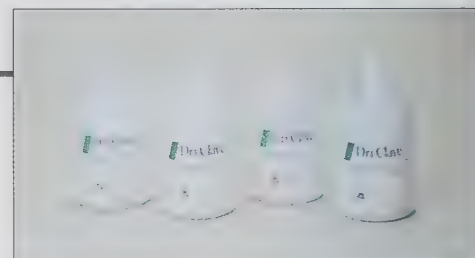
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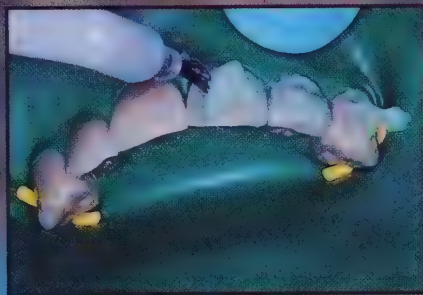
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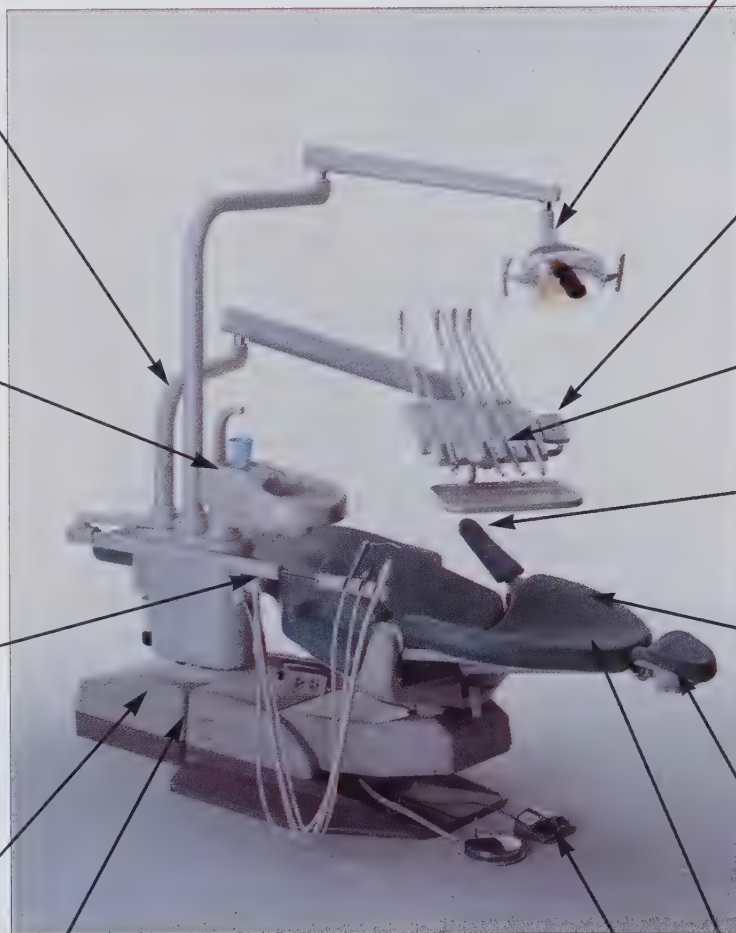
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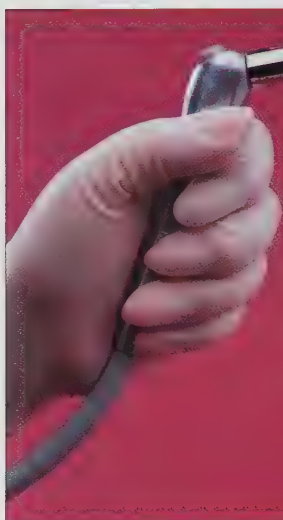
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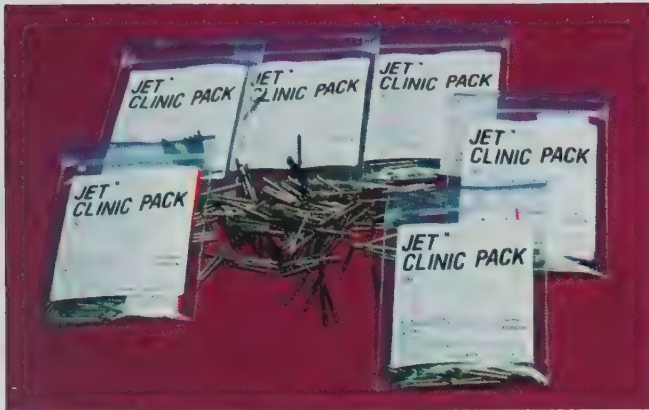


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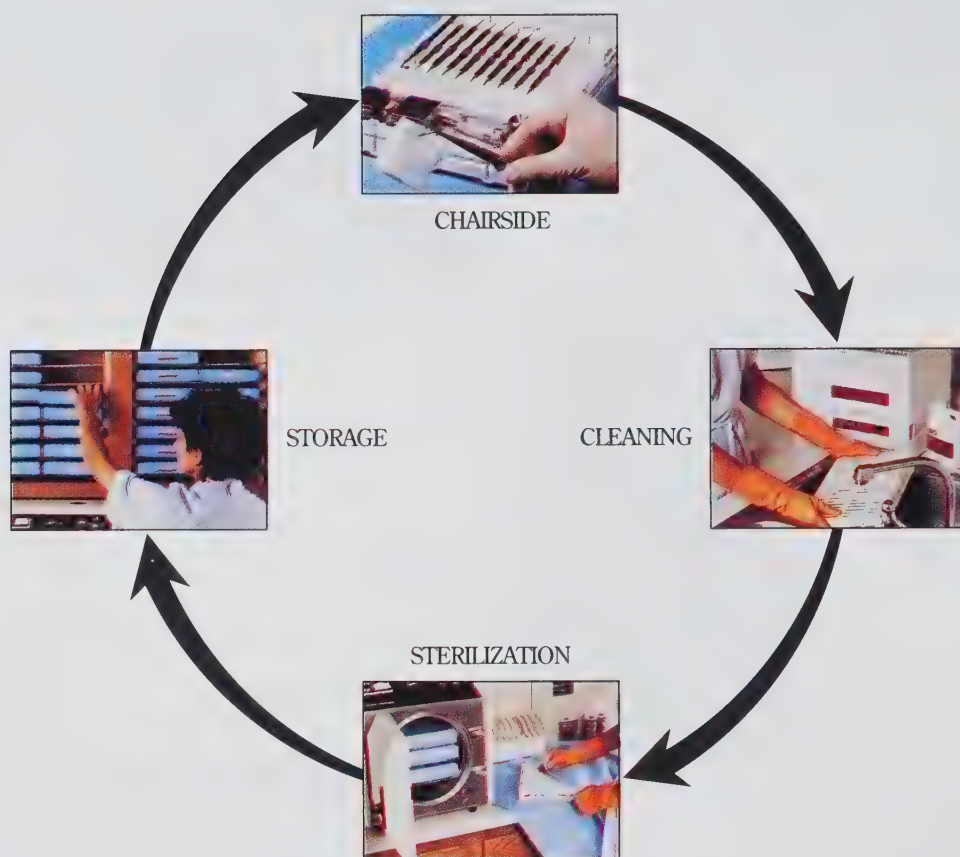


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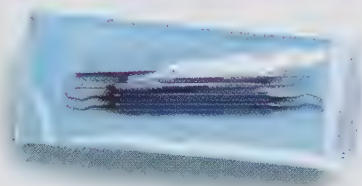
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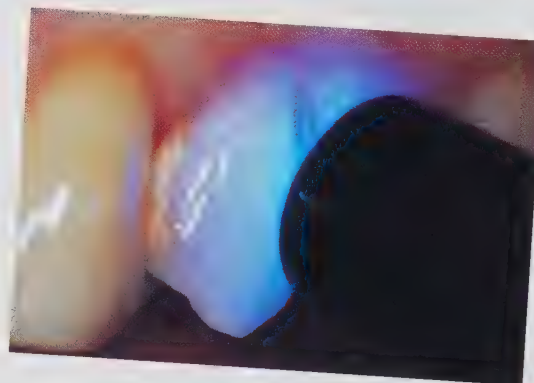
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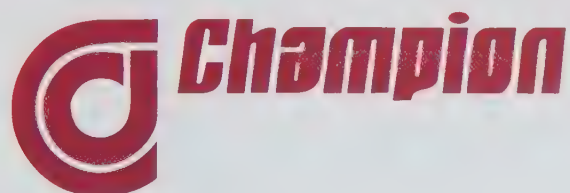
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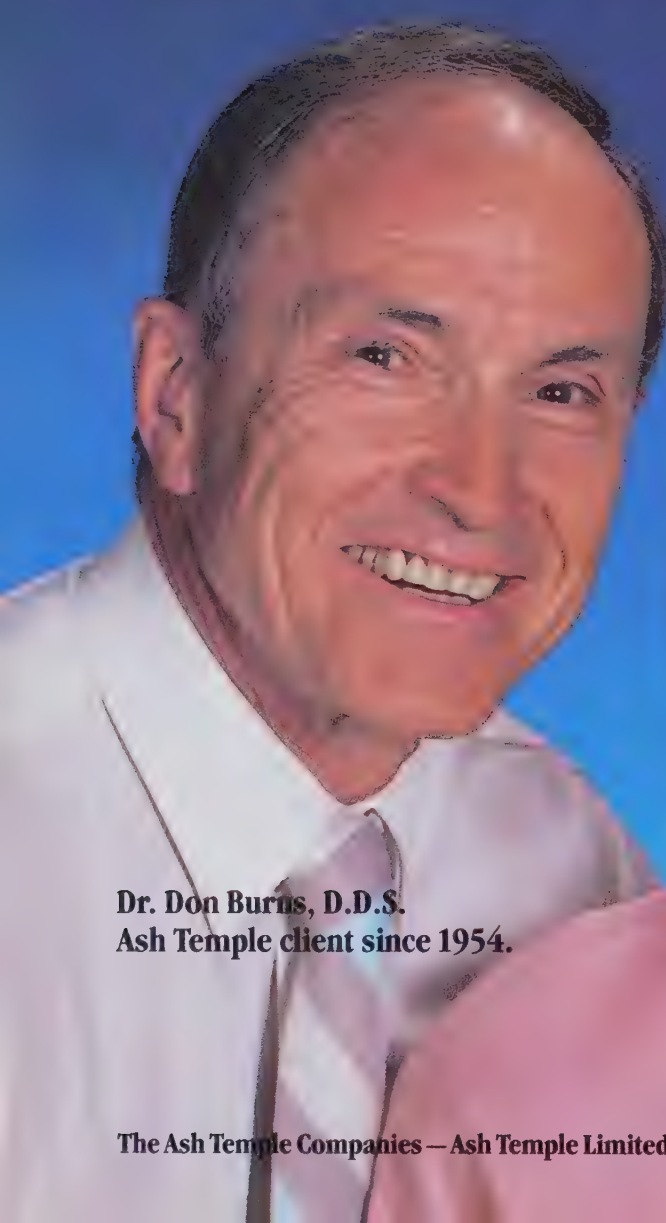
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Recommendations

1. Standards for infection control practices in health care settings and mechanisms to implement and evaluate these standards should be developed through collaborative efforts by provincial health ministries, related professional associations and licensing bodies, and health care facilities.
2. Health and Welfare Canada should contribute to this process by providing consistent and current national recommendations.
3. Suitable new technologies and methodologies should be promoted that enhance compliance with specific interventions such as disposal of non recapped needles through use of devices designed to reduce needlestick injuries.

V. Training of Health Care Workers in Principles and Practices of Infection Control

Statement

The practice of infection control is integral to the delivery of safe health care. Teaching health care workers the principles of infection control is a necessary prerequisite to their understanding of, and compliance with, infection control practices.

Structured infection control training incorporated into the curricula of schools that provide education to prospective health care workers would facilitate the acquisition of knowledge and enhance understanding of basic principles at the entry-to-practice level. Instruction is also an essential component of orienting staff to a new workplace and in-service education should continue during employment. While the value of formal training programs is recognized, the influence of role models on the practices of health care workers cannot be underestimated. Therefore, employees and medical staff in senior positions should be included in training programs. Further exploration is required to determine if a core curriculum can be developed that can be adapted and modified to the training needs of a particular practice setting.

Recommendations

1. Professional associations should be responsible for developing and promoting to their members continuing education programs in infection control.
2. Training in infection control should become a compulsory component of a health care worker's preparatory (pre-licensure) education and continuing education.
3. Training programs should be developed by associations, faculties or facilities and evaluated regularly to ensure that information is current and meets the changing needs of the health care worker. Continuing education programs should be based on a needs assessment.

VI. HBV- and HIV-Positive Health Care Workers and the Risk of Transmission in Health Care Settings

Statement

The risk of infection following exposure to blood contaminated with hepatitis B "e" antigen (HBeAg+) is estimated to be 100 times greater than the risk of infection following exposure to blood contaminated with HIV. However, the risk for death is estimated to be similar following a single exposure to a sharp instrument contaminated with blood from a HBeAg+ or HIV-infected person.

A number of issues were discussed that could have a bearing on strategies aimed at reducing the risk of transmission of HBV and HIV in the health care setting. These included the following:

- i) A sub-population of individuals infected with HBV can be defined who appear to be more likely to transmit infection, e.g., persons who are HBeAg+.
- ii) HBV infection can be prevented by vaccination and/or hepatitis B immune globulin.
- iii) Psychosocial stigmata associated with HIV infection are several times greater than for HBV infection.
- iv) The willingness of persons infected with HIV to participate and comply with primary and second-

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dary preventive strategies may be different from those infected with HBV. For example, it is likely that health care workers would more likely agree to HBV testing following a significant exposure than they would to HIV testing. Similarly, it is possible that they may be more willing to participate in pre-exposure HBV testing than they would with pre-exposure HIV testing.

v) The clinical course of HIV infection, with respect to mental and physical deterioration, could increase the risk of occupational transmission of this virus. While this is potentially true for HBV infection, it is not the usual experience in clinical practice.

Recommendation

When evaluating risk for transmission in the health care setting, and when planning strategies aimed at reducing the risk for transmission, similar considerations should apply to persons infected with HBV or HIV. However, the nature of specific preventive measures may differ (e.g., between HBeAg+ and HBeAg- individuals).

VII. Clinical Management of Health Care Workers Pre- and Post-Exposure

Statement

The effectiveness of hepatitis B vaccine in preventing HBV infection has been proven. Protecting health care workers from acute and chronic infection with this virus will further decrease the likelihood of health care worker to patient transmission in the future. Hepatitis B vaccination programs may be made more effective through the application of measures such as:

- i) offering vaccine to current staff;
- ii) making vaccination a condition of employment;
- iii) establishing a declination record for persons who refuse vaccination;
- iv) making vaccination mandatory before clinical training at schools providing education in health care services.

Surveillance for significant blood exposures of health care workers and patients would permit identification of persons in-

fectured as a result of the blood exposure and would permit counseling and the early management of their infection. Information collected by such a surveillance system would also be of value in better defining the risk for infection after a defined exposure.

A protocol for post-exposure management and follow-up of persons exposed to bloodborne pathogens should be generally applicable to all bloodborne pathogens, and be adaptable to a variety of health settings. Designated persons who are readily available should manage and follow-up exposed health care workers and patients according to current established protocols.⁴

Recommendations

1. All health care workers exposed to blood or blood products or at risk for occupational exposure to sharps injuries should be vaccinated against HBV. Within provinces, government, professional associations, institutions for training in health care disciplines, and health care facilities need to collaboratively establish programs for hepatitis B vaccination of these health care workers based on the demonstrated cost-effectiveness of these programs.

2. Campaigns aimed at promoting health and the personal benefits of reporting significant exposures should be developed to enhance participation in all health care settings and facilitate timely application of protocols. Professional associations, provincial governments, employees and educators should collaborate in the development of these campaigns.

3. All significant exposures should be reported through a proactive mechanism that:

- a) is easy to access and is user-friendly;
- b) assures confidentiality;
- c) clearly and succinctly outlines information required from health care workers;
- d) provides for referral to appropriate experts;
- e) activates a protocol for follow-up that instills confidence in the exposed worker.

VIII. Assessment of HBV- and HIV-Seropositive Health Care Workers

Statement

Evaluation of health care workers who are infected with HBV or HIV will be enhanced if uniform criteria are used in a consistent manner maintaining confidentiality, and participation of appropriate organizations, licensing bodies, and public health officials is ensured, when necessary. The development of supportive review bodies within licensing and/or professional organizations with whom infected health care workers are willing to cooperate will assist in allaying public concern.

In developing the following recommendations, a greater spectrum of opinions was recognized compared with other subject areas discussed. The recommendations provide a framework for further discussions within provinces on the development of a uniform and consistent approach to the evaluation of seropositive health care workers.

Recommendations

1. Any health care worker with an infectious disease that could put a patient at risk is encouraged to voluntarily seek medical evaluation with respect to the potential for transmission of the infection to patients. Seeking medical evaluation is a fundamental ethical principle for health care workers infected with HBV or HIV.

2. Current guidelines and legislation dealing with confidentiality should be reinforced and followed. Reporting of seropositive health care workers must only be done within the requirements of current legislation.

3. Medical evaluation of an infected health care worker should be the responsibility of the health care worker's primary care physician. Primary care physicians who care for HBV- or HIV-infected health care workers are encouraged to seek advice on assessment of risk for transmission of infection in the health care setting through an established consultation mechanism.

4. A consultation mechanism that can be easily accessed by a primary care physician should be established, ideally in each province. This mechanism should ensure confidentiality and allow for input from public health, licensing bodies and/or professional associations, experts in infectious diseases and infection control, and others as judged appropriate to the situation. Participants in this process need not know the health care worker's identity. An existing provincial reporting/consultation system may be adapted to serve as the consultation mechanism.

5. Criteria used to assess seropositive health care workers should include the medical evaluation (including mental condition), knowledge, application of infection control practices, and risk for injuries from sharp objects in the context of the individual's occupation.

6. Supportive non-threatening programs through licensing and/or professional organizations should be developed to assist seropositive health care workers whose practices are modified because of their infection status. Career counselling and, if necessary, job retraining should be encouraged to promote the utilization of the health care worker's skills and knowledge.

IX. Assessment of Invasive Procedures Performed By HBV- Or HIV-Infected Health Care Workers

Statement

Transmission of bloodborne pathogens from health care workers to patients has occurred during some invasive surgical and dental procedures. However, specific surgical procedures ("exposure-prone") that are associated with transmission of infection independent of the operator's technique, skill and medical status have not yet been well defined. In the absence of procedure-specific risk data, the concept of "exposure-prone" procedures is not useful for the development of strategies aimed at reducing transmission of bloodborne pathogens in health care settings.

Recommendations

High-risk practices and behaviors associated with invasive procedures need to be defined in specific health care settings, so that safer alternatives can be proposed to the health care worker and their implementation monitored. The identification of these practices and behaviours should consider the following:

- a) surgical techniques (e.g., manipulation of sharp objects without being able to see them clearly, digital palpation of sharp objects);
- b) environment (e.g., quality of equipment, level of assistance, physical setting);
- c) competency (e.g., fatigue, stress, level of training, experience and skill in relation to specific task, risk perception);
- d) exposure (e.g., potential for bleeding into a cavity, inadequate containment of bleeding);
- e) patient (e.g., uncooperative patient, adverse physical factors).

X. Disclosure On an Infected Health Care Worker's Status

Statement

Most contact between health care workers and patients does not involve the possibility of blood-to-blood contact and carries no risk for transmission of bloodborne pathogens. Current evidence suggests that risk of transmission of HBV and HIV from a serologically positive health care worker to a patient during an invasive procedure is extremely low.

As is the case for serological testing of patients and health care workers, disclosure of an infected person's test results involves many legal, ethical and personal considerations. An individual's right to know should be balanced with the potential harm caused if that knowledge is not kept confidential. A health care worker is under an ethical obligation to maintain confidentiality of patients' records, but the patient is under no similar ethical constraints. The decision to disclose or withhold the serological status of an infected health care worker

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As a health professional, do you provide a literacy-friendly environment?

Such an environment would include:

- a staff alert to signs of literacy deficiencies
- provision of clear, simple print materials
- non-print information using pictures, symbols, verbal instructions, video, etc.
- a referral system to literacy agencies

En tant que professionnel de la santé, cherchez-vous à créer un environnement favorable à l'alphabétisation?

Cet environnement devrait comporter :

- un personnel prompt à détecter les signes de déficiences en matière d'alphabétisation
- la fourniture d'un matériel imprimé clair et simple
- une information non imprimée utilisant des images, des symboles, des instructions verbales, des vidéos, etc.
- un système de mises en rapport avec des organismes d'alphabétisation

A message from the Canadian Public Health Association National Demonstration Project on Literacy and Health supported by the National Literacy Secretariat, Department of Multiculturalism and Citizenship



Un message du Projet national de démonstration sur l'alphabétisation de l'Association canadienne de santé publique, parrainé par le Secrétariat national de l'alphabétisation au ministère du Multiculturalisme et de la Citoyenneté

is also complicated by the public's current perception of the risk of exposure. Disclosure of an infected health care worker's serological positive status could have a devastating impact on that person's ability to practice professionally, in spite of the extremely low risk from transmission of the infection from the health care worker to the patient.

Recommendations

1. Routine disclosure of an infected health care worker's serological status is not justified.
2. The patient should be notified when a significant exposure to an infected health care worker has occurred. There is no need to disclose the identity of the source of the exposure.

XI. Public Education

A strong, consistent, and repetitive message focusing on the factors related to transmission of bloodborne pathogens in the health care setting may enhance understanding of the relative risk and appropriate preventive measures for both the public and health care workers. Provincial health ministries, the Canadian Public Health Association, professional associations and the federal government share in the responsibility for assessing needs for information and for developing and disseminating appropriate messages.

a Participating organizations are listed in Appendix I.

b Body fluids presenting risk for bloodborne-disease transmission are:

- blood • pleural fluid • semen • pericardial fluid • vaginal secretions • amniotic fluid • cerebrospinal fluid • peritoneal fluid • synovial fluid • other body fluids containing visible blood

References

1. Recommendations for prevention of HIV transmission in health-care settings. CDWR 13S3:1-10, 1987.
2. Health and Welfare Canada. *Infection control guidelines for isolation and precaution techniques*. Revised. Ottawa, Ontario: Health and Welfare Canada, 1992. (Supply and Services Canada, Cat. No. H30-11-6-1E).
3. Lynch, P., Cummings, M.J., Roberts, P.L., et al. Implementing and evaluating a system of generic infection precautions: body substance isolation. *Am J Infect Control* 18:1-12, 1990.
4. National Advisory Committee on Im-

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munization. *Canadian immunization guide*. 3rd ed. Ottawa, Ontario: Health and Welfare Canada, 55-6, 1989 (Supply and Services Canada, Cat. No. H49-8/1989E).

Secretariat: Dr. M. Brazeau, Chair, Dr. U. Allen, Ms. A. Barry, Dr. J. Spika, Mr. W. Stryde.

Appendix I

Participating Organizations

Alberta College of Physicians and Surgeons
Alberta Dental Association
Alberta Health/Ministère de la Santé de l'Alberta
Association des médecins microbiologistes infectiologues du Québec
Association des professionnels pour la prévention des infections
Association of Canadian Faculties of Dentistry/Association des facultés dentaires du Canada
Association of Canadian Medical Colleges/Association des facultés de médecine du Canada
British Columbia Medical Association
Canadian AIDS Society/Société canadienne du sida
Canadian Association of Emergency Physicians/Association canadienne des médecins d'urgence
Canadian Association of Interns and Residents/Association canadienne des internes et résidents
Canadian Association of Medical Microbiologists/Association canadienne des médecins microbiologistes
Canadian Association of University Schools of Nursing/Association canadienne des écoles universitaires de nursing
Canadian Cancer Society/Société canadienne du cancer
Canadian Centre for Occupational Health and Safety/Centre canadien d'hygiène et de sécurité au travail
Canadian Council on Health Facilities Accreditation/Conseil canadien d'agrément des établissements de santé
Canadian Dental Association/Association dentaire canadienne
Canadian Dental Hygienists Association/Association canadienne des hygiénistes dentaires
Canadian Hemophilia Society/Société canadienne de l'hémophilie
Canadian Hospital Association/Association des hôpitaux du Canada
Canadian Infectious Disease Society/Société canadienne des maladies infectieuses
Canadian Intravenous Nurses' Association/Association canadienne des infirmières(iers) en soins intraveineux
Canadian Medical Association/Association des médecins du Canada
Canadian Nurses' Association/Association des infirmières et infirmiers du Canada
Canadian Orthopaedic Association/Association canadienne d'orthopédie
Canadian Public Health Association/Association canadienne de santé publique
Centre d'études sur le sida

College of Dental Surgeons of British Columbia
College of Family Physicians of Canada /Collège des médecins de famille du Canada
College of Physicians and Surgeons of Ontario/Ordre des médecins et chirurgiens de l'Ontario
Community and Hospital Infection Control Association Canada/Association pour la prévention des infections à l'hôpital et dans la communauté - Canada
Corporation professionnels des médecins du Québec
Department of Health, Newfoundland and Labrador/Ministère de la Santé de Terre-Neuve et du Labrador
Department of Health and Community Services, New Brunswick/Ministère de la Santé et des Services communautaires du Nouveau-Brunswick
Department of Health and Social Services, Prince Edward Island/Ministère de la Santé et des Services sociaux de l'Île-du-Prince-Édouard
Department of Justice (Federal)/Ministère de la Justice (fédéral)
Fédération des médecins omnipraticiens du Québec
Fédération des médecins spécialistes du Québec
Health and Welfare Canada/Santé et Bien-être social Canada
Manitoba College of Physicians and Surgeons
Manitoba Dental Association
Manitoba Health/Ministère de la Santé du Manitoba
Ministry of Health, Province of British Columbia/Ministère de la Santé de la Colombie-Britannique
National Advisory Committee on Aging/Comité consultatif national sur le troisième âge
National Association of Occupational Health Nurses/Association nationale des infirmières et infirmiers en santé du travail
Nova Scotia Dental Association
Occupational Health and Safety Association
Ontario Medical Association
Ontario Ministry of Health/Ministère de la Santé de l'Ontario
Operating Room Nurses' Association of Canada/Association des infirmières et infirmiers des salles d'opération du Canada
Ordre des dentistes du Québec
Patient Rights Association
Professional Association of Residents and Interns of British Columbia
Royal College of Dental Surgeons of Ontario/Ordre royal des chirurgiens-dentistes de l'Ontario
Royal College of Physicians and Surgeons of Canada/Collège royal des médecins et chirurgiens du Canada
Saskatchewan Health/Ministère de la Santé de la Saskatchewan
Society of Obstetricians and Gynaecologists of Canada/Société des obstétriciens et gynécologues du Canada
Toronto HIV Primary Care Physicians Group

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TABLE 1

Body weight	Dosage in capsules of Rovamycine '250'
	(750,000 I.U. Spiramycin/capsule)
15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

absorption is not affected by food. In severe infections, the daily dosage may be increased by one half. In the treatment of beta-hemolytic streptococcal infections, adequate spiramycin dosage should be administered for 10 days. **SUPPLIED: Rovamycine '250':** Each orange and red capsule contains: 750,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50. **Rovamycine '500':** Each grey and red capsule contains: 1,500,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50.

Additional information available from:

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Tel: 1-800-363-1871 FAX: (514) 333-3769

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SPECIALTY FEATURE



Is it time for a value added network for dentistry?

In today's fast-paced world, where people demand instantaneous service, many industries have created computer networks that connect them directly with their clients. It's a question of time and money. By communicating with customers on-line, companies have been able to reduce order processing costs and boost productivity. In turn, the customers have enjoyed lower prices and faster service.

Now, through CDAnet Plus, CDA has made these advantages – and more – available to Canadian dentists. Starting this year, Canadian dentists who are members of CDA or a cosponsoring provincial association, and subscribe to CDAnet, will have access to a wide range of value-added services, including electronic and voice mail, financial services, easy to use practice management programs and a multitude of product information.

CDA led the world in bringing electronic data interchange to dentistry. (To date, 1,400 Canadian dentists are taking advantage of the inherent benefits of on-line claims processing.) Now the association has taken the lead again, by introducing CDAnet Plus. It's an idea whose time has come, as the following questions and answers will make clear...

Question: *Is there a need in dentistry for a computer and voice network?*

Answer: Computer to computer communications has come to dentistry. In fact, dentistry is at the lead-

ing edge of a trend that will sweep right across the health care professions, business and industry in much the same way as other new technologies – like the telephone and the fax – revolutionized the way people work and interact with one another. The trend is picking up momentum gradually, but it building up a head of steam and expanding. It is destined to become an essential aspect of your practice.

Dentists communicate with each other, their suppliers, associations and support services on a regular basis. The computer and voice network can play an effective role in streamlining this process. Associations will now be able to deliver important information to your computer over night. The costs and lead time needed to prepare, produce and mail a printed document will no longer be required – just some of the advantages available with electronic communications.

In a dentist's very busy day, it is often difficult to respond to every practice and personal demand. With the electronic mail function of CDAnet Plus, dentists will now be able to send paperless referral letters to other practitioners and forward messages or product orders to third-party mail boxes, 24 hours a day. This paperless form of communication is likely to replace conventional mail, with Canada Post introducing its own version in late 1993.

The applications are endless: from exchanging information with fellow practitioners, to promoting

an event, or conducting an on-line study club.

Information is critical in today's health care system. Through CDAnet Plus, CDA's library will provide member dentists with information regarding new dental topics, abstracts, and recent acquisitions, on-line. Eventually, other health care databases and shopping networks will be connected to your computer system, placing a world of information and shopping opportunities at your finger tips. Information on services will be easily retrieved from a special screen that will act like the "Yellow Pages" of dentistry.

Question: *What products and services will be available on the network?*

Answer: The marketplace will determine what products will be provided on the network. These products and services will be selected in response to the level of industry demand. Also, products and services that dentists require outside of their practice requirements will be included to increase the interest level for the network. Current plans call for the product mix to include Electronic Mail, supply ordering, and financial banking services such as draft capture and credit card approval.

Today's technology permits you to complete a simplified application for a loan, lease or line of credit on your computer, in complete confidence, and submit it to several financial institutions at once to obtain the best rate.

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- Practices for sale
- Associateships, salaried positions
- Staff employment positions
- Loans, leases, lines of credit
- Holidays, exotic cars, boats
- Used equipment

The voice network will have even more information on products and services. Voice advertisements will be available in such categories as: practices for sale, associateship opportunities, staff employment positions, holidays, and used equipment.

Question: *Why would I want to purchase products and services on the network?*

Answer: The products and services will be of equal or greater value to the present alternatives, and prices for these services will be competitive. The network will strive to make it easier to provide information regarding the products and services available to dentists.

CDA's president, Dr. Bernard Dolansky, has already met with representatives of the Dental Industries Association of Canada and assured them that CDA's interest is to make sure that all the services offered on CDAnet Plus meet both the needs of dentists and the industry.

As a group, dentists offer a marketplace for companies to provide personal products and services. Our task is to define the potential of this marketplace and to attract companies in each category to advertise on-line. As an example, a local travel agency could not afford to advertise and service the entire dental market across Canada, and still provide the highest possible volume discounts on their travel packages, by conventional methods. A later CDAnet Plus release will include a travel agency package that will offer travel specials at wholesale rates. It will be possible to preview information on the trips on screen, and place a request on-line. But only you decide whether the product is competitive with the other alternatives available, and you can do it before making your purchasing decision.

The voice network is confidential and convenient to use.

Whether you are buying or selling your practice, seeking an associateship, requesting a valuation, or attempting to secure financing, the voice network can offer an effective resource to "shop for the best value." With the voice network, you can record your own 30-, 60-, or 75-second commercial, or have your message narrated for you. A friendly voice message can often more easily generate a response than a printed page. The messages can be password protected for confidentiality should you be advertising for staff or putting your practice up for sale. When callers leave their name and number, you do not miss the prospective purchasers even when you are away from the office.

Certain products can be easily delivered on a network. Practice management programs and practice valuations that were traditionally labor intensive can be administered on the network. A practice valuation can be generated from information entered at the practitioner's computer keyboard. The final report will be delivered on-line and reviewed in person by a qualified organization. The on-line valuation can be cost-effectively updated annually.

Question: *Who will supply these products and services for the network?*

Answer: The products and services are expected to come from the companies presently serving Canadian dentists. Who else knows the market better? The network will make it possible for companies to create new marketing and support programs on-line.

Accountants will be able to connect with their dental customers to transmit practice financial data. More effective financial programs should result, with current information delivered more quickly. We have a number of programs to introduce to the accounting community, such as break-even analysis, income and expense ratios, cash flow analysis, performance monitors, etc.

Financial organizations will be able to deliver applications that address the economics of a practice and allow dentists to better manage the funding risk. We have sugges-

tions for these programs, but many others will evolve from the current industry, which is in the best position to deliver these solutions.

Insurance and financial planners can connect to their dental customers to deliver the most current information on insurance and investments. Policies and contracts can be transmitted to all parties involved in the transaction.

Question: *How much will I have to pay?*

Answer: The CDAnet Plus data network program disks will be distributed to dentists participating in CDAnet at no cost. There are no additional fees to use the program to scan the products and services that will be offered for sale on your computer. A price list for the products or services on-line will be available prior to any purchase.

Subscribing dentists will also be able to listen to prerecorded advertising messages on the voice network at no cost. The commercials are paid for by the advertisers. If you are interested by what you hear, you have the option to leave a message. This form of advertising works because it is convenient, private, and free to the caller.

Advertising on the CDAnet Plus program will subsidize the operational budget of the network. In addition, corporations will be approached to sponsor segments of the network that apply to their products. The objective is to attract numerous sources of funding to reduce the user cost to the dentist.

Question: *Will the network be easy to use?*

Answer: CDAnet Plus was designed to be used by people with minimal computer expertise. The CDAnet Plus program includes an easy to understand help function to assist first-time users.

The voice network is as easy to use as your touch-tone telephone. Simply dial the main number, and voice prompts will direct you to the product information that you are interested in. Press one key to listen to other messages. Press another key to leave a voice request for more information. It's an easy to understand, three-key process for quick and current information.

Question: *What if I don't have an office computer?*

Answer: The network will also connect to your home computer, if it meets the minimum requirements. It will now be possible to complete many tasks from the comfort of your home at your convenience. The voice network can be accessed from any touch-tone telephone 24 hours a day, 7 days a week.

Question: *How many dentists across Canada will be on the network?*

Answer: The CDAnet Plus program disks will be distributed to subscribing dentists on a province by province basis. The entire Canadian dental industry is expected to be on-line within the first year. A major concern will be to provide a high level of support to the dentists when they start to use the program.

With the voice network, calls can be made from any touch-tone telephone system across Canada. Interested buyers can listen to pre-recorded messages at their convenience – 24 hours a day, seven days a week. Essentially, the entire dental market is accessible to the voice network.

Question: *When will the CDAnet Plus value-added network be available?*

Answer: The target release date for the computer network is mid 1993. The voice network is open for business today, to members of CDA or a cosponsoring provincial association who have joined the CDAnet system. To find out how you can join, call 403-271-2222, or 1-800-267-9701.

Be sure to visit the CDAnet booth at the annual dental meeting in Toronto April 28 to May 1, 1993. Please take the time to attend a demonstration of the CDAnet Plus voice and data network, which will be conducted throughout the day, Friday, April 30, 1993.

CDA is constantly striving to increase the level of products and services available to its members. The implementation of a nationwide voice and data network will help dentists to face the fast paced demands of the future by providing a communication centre for Canadian dentistry – CDAnet Plus.

General Practice Residency In Dentistry

Four teaching hospitals affiliated with The University of British Columbia, The University Hospital, The Vancouver General Hospital, Children's Hospital, and the Cancer Control Agency of British Columbia, together offer seven positions in a one-year dental residency program commencing each June and July. Clinical and didactic experience is offered in most dental disciplines.

Candidates must satisfy the requirements of the College of Dental Surgeons of B.C. for registration as well as those of the Department of Immigration, Government of Canada.

Stipends are available. Fringe benefits include uniforms, 20 days of vacation, plus medical and dental plans. Membership in the Professional Associations of Residents and Interns is required.

Residents are registered as students of The University of British Columbia and with the College of Dental Surgeons of B.C., for which separate fees are paid.

The deadline for the receipt of applications is **September 13** for entry to the program the following year. Selection of residents is based on application information, and reference letters. Personal interviews may be required.

Enquiries regarding the program and requests for application forms can be addressed to:



The Director
The Division of Graduate/Postgraduate Studies
Faculty of Dentistry
The University of British Columbia
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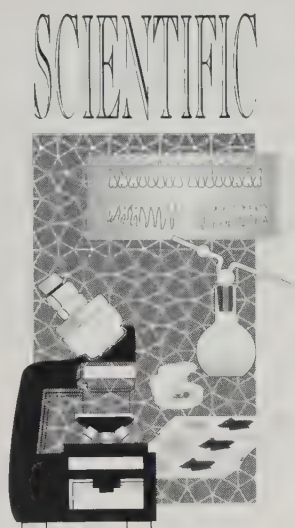
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The Effectiveness of the Nd:YAG Laser in the Treatment of Dental Hypersensitivity

S.C. Gelskey, DH, B.Sc., MPH

J.M. White, B.Sc., DDS, MS

V.K. Pruthi, DDS, Cert. Perio.

ABSTRACT

Dentin hypersensitivity is one of the most painful and least predictably treated chronic conditions in dentistry. The effectiveness of laser therapy in the reduction of dentin hypersensitivity and its effects on pulpal vitality were studied. Nineteen subjects participated in the randomized, double-blind study, and were followed up for three months. Two sites were treated. One received helium neon (He:Ne) laser treatment and the other received He:Ne plus Nd:YAG (He:Ne+Nd:YAG) laser treatment. Laser treatment consisted of 30 millijoules (mJ) to 100 mJ per pulse, at 10 pulses per second (pps) in increments of 10-40 seconds each over a total treatment time of less than two minutes, without local anesthesia. Hypersensitivity was assessed by mechanical stimulus (using a sharp explorer), and thermal stimulus (using a blast of cold air from a dental syringe). Pulpal vitality was measured using an electrical stimulus. The results indicate that immediately following laser treatment and for three months thereafter, the subjects' perceived level of discomfort decreased. He:Ne treatment reduced dentin hypersensitivity to air by 63 per cent and to mechanical stimulation by 61 per cent over three months. The He:Ne + Nd:YAG treatment reduced dentin sensitiv-

ity to air by 58 per cent and to mechanical stimulation by 61 per cent. All teeth remained vital after laser treatment, with no adverse reactions or complications. He:Ne and He:Ne + Nd:YAG laser treatment can be used to reduce dentin hypersensitivity without detrimental pulpal effects.

SOMMAIRE

En dentisterie, l'hypersensibilité de la dentine est l'une des affections chroniques les plus douloureuses dont il est très difficile de prévoir les résultats du traitement. Aussi a-t-on étudié l'efficacité des thérapies au laser pour réduire cette hypersensibilité ainsi que leur effet sur la vitalité pulpaire. Pour cette étude en double insu, on a choisi au hasard dix-neuf sujets sur qui on a effectué des examens de suivi pendant trois mois. Deux sites ont été traités, l'un avec un laser à l'hélium et néon (He:Ne), et l'autre avec ce même laser plus un laser grenat d'yttrium et d'aluminium dopé au néodyme (Nd:YAG) [He:Ne + Nd:YAG]. Le traitement s'est fait avec une charge de 30 à 100 millijoules (mJ) à 10 impulsions par seconde, par incréments de 10 à 40 secondes chacun, le traitement durant moins de deux minutes en tout et se faisant sans anesthésie locale. On a déterminé l'hypersensibilité par stimulations mécaniques (à l'aide

d'une sonde pointue) et thermiques (en poussant de l'air froid avec une seringue). Quant à la vitalité pulpaire, on l'a mesurée par stimulations électriques. On a découvert que, tout de suite après le traitement au laser et pendant les trois mois suivants, les sujets éprouvaient moins d'inconfort. Durant les trois mois, le traitement au laser He:Ne a réduit l'hypersensibilité de la dentine à l'air de 63 p. cent et aux stimulations mécaniques de 61 p. cent. Par ailleurs, le traitement aux lasers He:Ne + Nd:YAG l'a réduite de 58 p. cent à l'air et de 61 p. aux stimulations mécaniques. Toutes les dents sont restées vitales et on n'a relevé ni réactions contraires ni complications. Ainsi donc, les traitements avec des lasers He:Ne et He:Ne + Nd:YAG peuvent servir à réduire l'hypersensibilité de la dentine sans nuire à la pulpe.

Introduction

Dentin hypersensitivity arises from dentin being exposed to the oral environment, and is not associated with other dental pathology.¹ It is estimated that one in seven adults experiences occasional pain due to dentin hypersensitivity.² Although numerous procedures and agents have been employed to treat the condition, over the years, none predictably eliminates it.

There are two basic theories on

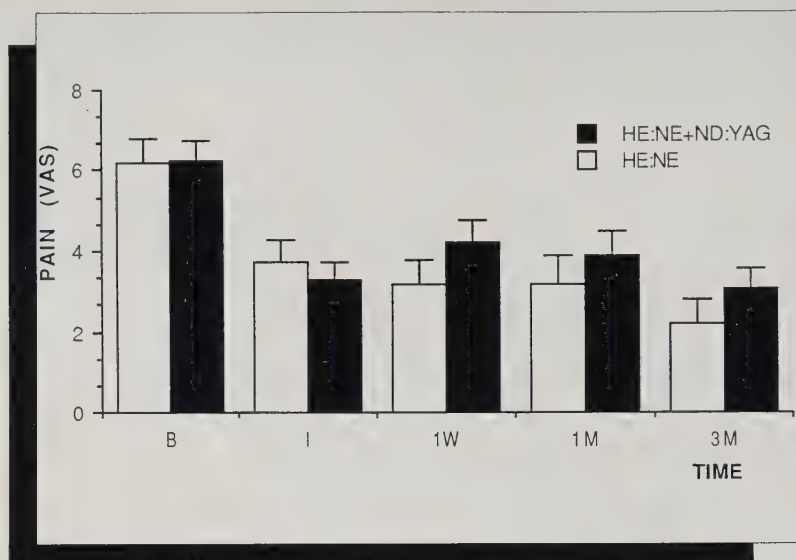


Fig. 1: Mean level of pain (SD) on the visual analog scale in response to thermal stimulus at all time intervals for sites treated with He:Ne or He:Ne + Nd:YAG laser (baseline, immediately following treatment, one week, one month, three months).

the mechanism of dentin sensitivity: hydrodynamic and neural. Recent literature supports the hydrodynamic theory.^{1,3-6} A number of studies have demonstrated that hypersensitive dentin displays patent tubules that are greater in number and diameter than those displayed by non-sensitive dentin, and that sensitivity is reduced when these tubules are occluded.⁷

The hydrodynamic mechanism, as suggested by the deep penetration of methylene blue through the exposed cervical dentin of hypersensitive teeth, appears to mediate the transmission of painful stimuli across the dentin. This phenomenon does not occur in nonsensitive teeth.⁵ Dentin permeability and hypersensitivity are both reduced when the dentinal tubules are obturated.⁸ Although the hydrodynamic mechanism of pain transmission is not fully understood, it has been suggested that sensitivity can be lessened by partially occluding the orifices of the dentinal tubules, thereby decreasing their radius and reducing the rate of fluid flow.³

Since hypersensitive teeth demonstrate tubular diameters that are significantly wider (2x) than those of nonsensitive teeth,⁵ it would appear that treatment focused at decreasing the radius is a prerequisite for effective desensitization. Most of the desensitizing procedures or agents in use today attempt to in-

hibit painful stimuli by either sealing the dentinal tubules with coating mechanisms, or by altering the tubules' contents through coagulation, protein precipitation, or the creation of insoluble calcium complexes.⁹⁻¹²

Dentin may be fused by short exposures to either the CO₂ or Nd:YAG laser. In this case, the fused dentin solidifies into a glazed, non-porous surface.¹³ If dentin hypersensitivity results from the hydrodynamic movement of fluid in the tubules, fusing the tubules with a Nd:YAG laser should result in a predictable and long-term elimination of dentin hy-

persensitivity.

Since the advent of the first ruby laser system, a variety of lasers have been evaluated for detrimental pulpal effects, both *in vitro* and *in vivo*.¹⁴⁻¹⁶ Laboratory studies have focused primarily on measuring the increase in pulpal temperature during laser treatment of enamel and dentin.¹⁷ These studies show that laser treatment of enamel and dentin can be achieved without a significant increase in pulpal temperature. *In vivo* studies, however, should provide indicators of the clinical application of laser treatment.¹⁸

The effectiveness of the Nd:YAG laser, with its fibre optic delivery system, low power, and pulsed emission, has been investigated. Controlled variations in the physical surface of dentin, induced with the Nd:YAG laser, can be seen using scanning electron microscopy.¹⁹ The effect of Nd:YAG laser treatment on the hydraulic conductance of dentin showed a trend toward decreased permeability at higher powers and longer exposure times. Specimens with a decrease in hydraulic conductance only experienced partial closing of the dentin tubules, the authors suggest, where laser interaction actually took place.²⁰

Pulpal effects have also been studied. No significant *in vitro* pulpal disruption, i.e. no deviation from the normal histology of the pulp, occurred to teeth having a

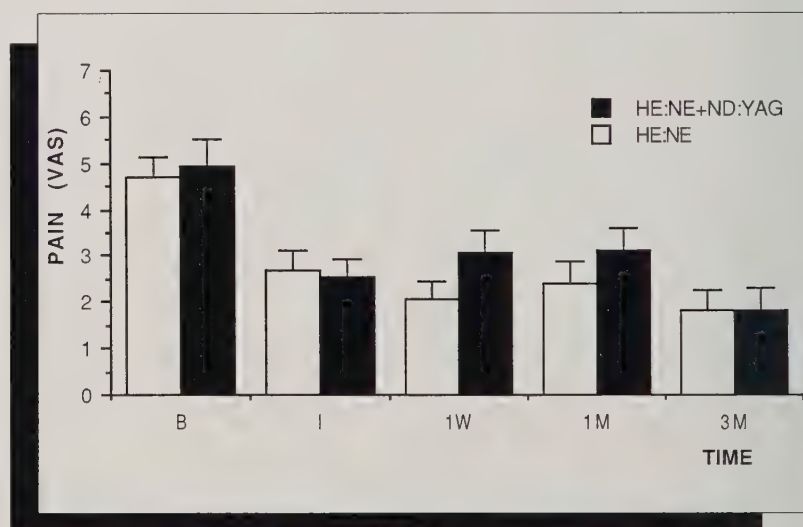
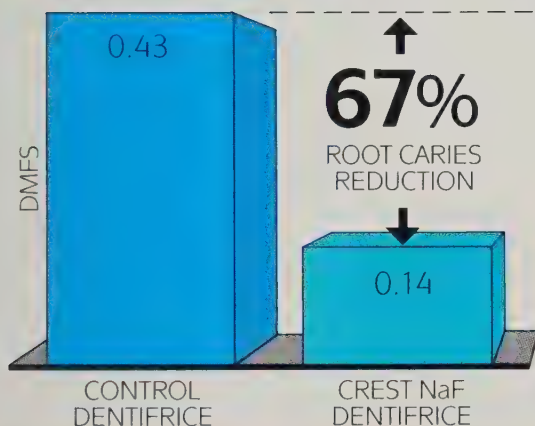


Fig. 2: Mean level of pain (SD) on the visual analog scale in response to mechanical stimulus at all time intervals for sites treated with He:Ne or He:Ne + Nd:YAG laser (baseline, immediately following treatment, one week, one month, three months).



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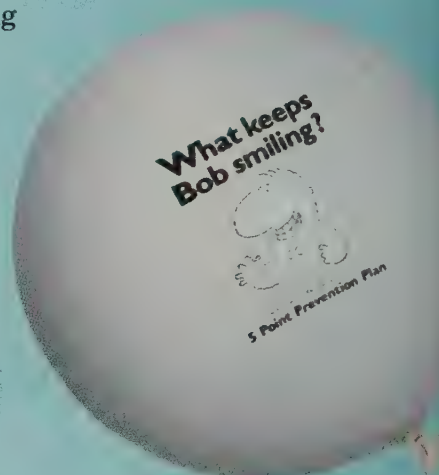
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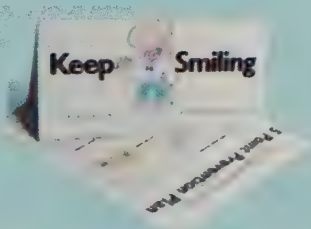
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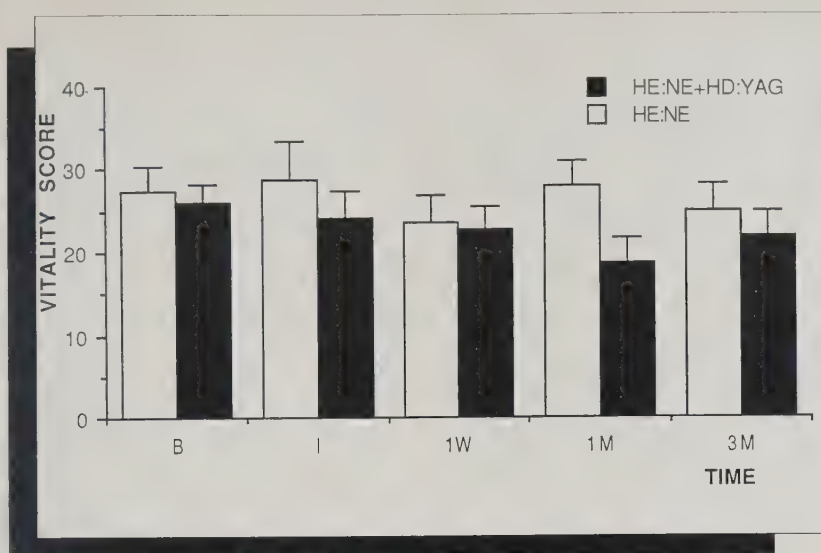


Fig. 3: Mean vitality scores (SD) in response to electrical stimulus from a pulp vitality meter at all time intervals for sites treated with He:Ne or He:Ne + Nd:YAG laser (baseline, immediately following treatment, one week, one month, three months).

remaining dentin thickness of greater than 1.0 mm following exposure to 240 joules (J) using the Nd:YAG laser.²¹

Given its ability to close or partially close the dentinal tubules, and to decrease hydraulic conductance, the use of the Nd:YAG laser would appear to have potential as a means of reducing root surface hypersensitivity. The purpose of this *in vivo* study was to evaluate the effectiveness and safety of the Nd:YAG laser in this regard.

Methods and Materials

Nineteen healthy adults, drawn from patients attending the University of Manitoba's dental faculty as well as from local periodontal practices, participated in this study. In all, nine males and 10 females, ranging in age from 25 to 69 years, received laser treatment and were followed up for three months.

A pre-test eligibility screening examination ensured that all subjects were medically healthy and had no dental pathology, restorations, or clinical evidence of trauma from occlusion (confirmed by periapical radiographs) associated with a minimum of two hypersensitive teeth. Hypersensitivity was established at the screening session through mechanical stimulation with an explorer. Patients had not undergone periodontal surgery or scaling and root planing

within the past six months. All expressed a long-standing history of hypersensitivity. They were advised of their general dental/periodontal status and of the nature and intent of the study, and were asked to abstain from professional and/or personal desensitizing treatment for the duration of the study. Subjects signed an informed consent indicating their willingness to participate in the three-month study.

The baseline, immediate post-treatment, one week, one month and three month examinations were completed in a blind manner by the same examiner. The laser operator was not present. All examinations included standardized stimulation of the two test teeth, using three stimulating methods:

1) Mechanical: A sharp dental explorer (Thompson, Number 5, Tactile Toness) was passed over the cervical third of the site (up to 20 times) from the distal to mesial line angle.

2) Thermal: A two- to 10-second blast of air was delivered to the cervical third of the tooth via a fully depressed air syringe. Adjacent teeth were isolated from the air with gauze squares and cotton rolls.

3) Electrical: A pulp vitality meter (Analytic Technology) was used to determine the pulpal vitality of the tooth in response to an electrical

stimulus. Vaseline acted as the conductor, and the tip of the probe was placed on the cervical third of each site. The meter was set at a rate of two for all subjects, and steadily increased from "0" over two minutes.

Subjects were asked to rank their perception of the pain caused by the three stimuli from zero to 10, based on the visual analog scale (VAS).²² The experimental design was cross-mouth and double-blind, with one investigator providing treatment and a second evaluating the treatment. Neither the examiner nor the subject was aware of which type of laser treatment each site received.

Following the baseline examination, each site was randomly assigned to receive He:Ne or He:Ne + Nd:YAG laser treatment. Before treatment, supragingival plaque was removed from the two teeth by the examiner, using a soft toothbrush (Number 411 Gum Brush, Butler Mfg. Co.).

In the absence of the examiner, a dLase 300 Nd:YAG pulsed infrared dental laser (American Dental Laser Co., Troy, Mich.) was operated by a periodontist who had been trained in its use. The patient, operator and assistant wore laser-safe glasses during all laser treatment. The operator and assistant also wore gowns, masks and gloves, following routine infection control procedures. Strict laser safety guidelines were followed, as specified by the laser manufacturer (Sunrise Technologies, Freemont, Cal.) and the Manitoba Radiation Protection Service.

Each site received treatment with either the He:Ne laser or He:Ne + Nd:YAG laser. The emission wavelengths of the lasers were 632.8 nanometres (nm) for the He:Ne and 1,064 nm for the Nd:YAG.

Treatment was delivered using a 320 micron tip beginning at 30 mJ and 10 pps for 10 seconds. Laser exposure was incrementally increased for 10 to 40 seconds, followed by a five to 10 second rest period as the mJ setting was increased by intervals of 10 mJ up to a maximum of 100 mJ, or until the patient felt discomfort. The laser was used at the cervical third of the

exposed dentin surface. Its fibreoptic tip was moved in a mesial-distal direction, covering the exposed area, or approximately 3.0 mm times 5.0 mm in distance.

A thin coat of absorbance initiator (Sumi ink – carbonized pine or vegetable oils mixed with animal or fish glue, which is moulded, dried and ground and then mixed with water) was applied with a dycal applicator to the cervical area of the tooth to complete the surface modification. Treatment was again administered for 10 seconds at 30 mJ and 10 pps followed by a five to 10 second rest period. If the patient reported no discomfort, the setting was increased to 40 to 100 mJ. Treatment continued at this power for the remainder of the minute. The laser operator used the explorer intermittently during treatment to identify the specific zone of sensitivity and direct treatment to that area. No attempt was made by the operator, on completion of the two minute period, to establish the presence of sensitivity.

Only the He:Ne guiding beam (632.8 nm wavelength) was used to treat the second tooth. The He:Ne site was treated identically to the He:Ne + Nd:YAG site, and the operator took particular care to provide similar treatment experiences for the subject during both methods of treatment, using initiator on both teeth.

Without the laser operator present and immediately following treatment of the two sites, the examiner evaluated the subjects' response to mechanical, thermal and electrical stimuli. A third and independent individual documented the subjects' verbal response to treatment. Subsequent evaluations were made at one week, one month and three months. The results of all evaluations were kept confidential for the duration of the study, and the examiner did not know which treatment each specific tooth had received. Subjects were asked to continue their usual daily oral hygiene practice.

Statistical analysis was carried out using repeated measures ANOVA for independent variables of stimulation method through time and dependent variable of patient perception of pain.

Results

Eighteen of the 19 subjects who received laser desensitization treatment were followed up for three months. One individual withdrew from the study due to family illness.

At baseline, there was no significant difference in perceived discomfort on the visual analog scale to thermal (air) or mechanical (explorer) stimuli between the He:Ne + Nd:YAG and He:Ne sites. The response, however, was higher on average to air than to the explorer at baseline and at all subsequent evaluations: immediate, one week, one month, three months (Figs. 1 and 2).

The level of discomfort elicited by thermal and mechanical stimulation decreased significantly ($p < .01$) immediately following laser therapy and continued to demonstrate a decrease for the duration of the study. There was no significant difference in discomfort to mechanical stimulation between the He:Ne + Nd:YAG and He:Ne sites at any evaluation (Figs. 1 and 2).

There was also no difference in discomfort between the two types of laser treatment in response to air at any time following therapy, except at one week, where there was a tendency for the He:Ne + Nd:YAG site to demonstrate greater discomfort to air than the He:Ne site (Fig. 1).

There was a tendency immediately following treatment for the vitality scores in the He:Ne + Nd:YAG sites to be lower than in the He:Ne sites, and the difference was significant ($p < .01$) at one month (Fig. 3).

The total number of pulses delivered to the sites had no influence on the reduction of discomfort at any posttreatment evaluation. The number of pulses delivered ranged from 880 to 1,900. All teeth remained vital as measured by all three methods of stimulation and appeared normal radiographically at the three-month follow up examination. There were no adverse effects of laser treatment and no complications. The patients' response to the laser treatment was positive.

Discussion

Criteria for an ideal desensitizing agent were identified in 1935.²³ It does not irritate or endanger the pulp; it is relatively painless, easily applied, rapid, permanently effective, and does not discolor the teeth. No existing desensitizing agent appears to meet all of these criteria.

Dentin hypersensitivity results when a stimulus applied to the dentin causes movement of the fluid in the dentinal tubules, which then stimulates nervous processes in the more pulpal areas of the dentin and/or the nerves in the pulp itself, producing a pain impulse transmission.²⁴ Not only do hypersensitive teeth have greater numbers (8x) of dentinal tubules present, such teeth also exhibit tubular diameters significantly wider (2x) than nonsensitive teeth.⁵

It has been suggested that decreasing the radius of the dentinal tubules, by partially occluding the orifice of the tubules, should reduce the rate of fluid flow, thus reducing sensitivity.³ The Nd:YAG laser is capable of closing the tubular orifices of the intertubular dentin of bovine teeth.²⁵ Laser-modified dentin surfaces observed by conventional SEM have demonstrated physical changes induced by laser treatment. It has been suggested that these changes include a melted and resolidified dentin surface and partial closing of the tubules.²⁰

Dentin has been fused after short exposures to the Nd:YAG laser, and the fused dentin has crystallized into a glazed, nonporous surface.¹³ Numerous studies have related dentin permeability and hydraulic conductance to surface area and dentin thickness, tubular radius, and surface character.²⁶⁻²⁸ No significant reduction in hydraulic conductance was found when the Nd:YAG laser was applied to dentin discs. However, it has been suggested that this may have been due, in part, to the fact that the entire surface of the dentin disc did not receive equal laser interaction, which caused insufficient laser energy to be delivered for complete closure of all tubules.²⁰ Similarly, in the current study it is possible that laser interaction only occurred near the contact spot, therefore

leaving some of the sensitive site untreated.

The laser energy and time parameters employed in the present study were selected for their potential to promote successful desensitization without any untoward pulpal responses. It is generally accepted that a 5° C rise in pulpal temperature will cause a 15 per cent necrosis.²⁹ The Nd:YAG laser does not cause this degree of pulpal temperature rise even after two minutes of treatment at powers of 0.4 to 3.0 W and frequencies of 10 to 30 Hz¹⁹ – parameters well beyond those used in the current study. The conservative laser parameters used in the current study may have produced laser interaction that was insufficient to achieve complete desensitization.

The methods used in the present study to evaluate hypersensitivity were based on previous studies, in which a blast of air from a dental syringe resulted in the movement of the contents of the dentinal tubule (five to 10 nm). Similarly, mechanical stimulation of the dentin with an explorer resulted in outward displacement of the tubule contents.³⁰

These methods of stimulation/measurement may not be sensitive and reliable enough to elicit reproducible and valid readings. Although only one examiner was involved, variations in the pressure of the mechanical stimulus could have occurred. The same air syringe was used for all measuring periods, and an attempt was made to isolate the adjacent teeth from the thermal stimulus of air. However, additional control may have resulted in more precise measurements.

Others have found that the electrical stimulus scores for sensitive teeth were approximately nine volts, and that nonsensitive teeth demonstrated an average measurement of 25 volts.³¹ Following laser treatment, the teeth were all vital, with no radiographic evidence of pathology. No irreversible damage and no adverse effects were caused by either the He:Ne or He:Ne + Nd:YAG treatment.

Some studies have found an increase in the scores generated by

an electrical stimulus following the use of a desensitizing dentifrice. In this study, however, the electrical response scores (vitality scores) had a tendency to decrease.³¹

Hypersensitivity sometimes decreases with time without any intervention. This may be due to bacteria or their products entering the open tubules and decreasing permeability, or the salivary mineral salts may deposit and reduce the radius of the tubules.⁴ Both study sites may have improved on their own over the three-month period regardless of treatment. This is unlikely, as all of the subjects in this study had a long-standing history of hypersensitivity.

An attempt was made to ensure that the sensitivity experienced by study participants at baseline was not related to sequelae resulting from recent periodontal surgery or prophylaxis (within six months). The relatively short duration (three months) of the study did not jeopardize the periodontal status of participants even though a prophylaxis was not allowed during the study period. A number of individuals did present with slight supragingival deposits of calculus at the one- and three-month visits. Although an attempt was made to consistently stimulate the sites with the explorer and air, clearly the potential for a favorable occluding and/or barrier effect of these deposits on the response to stimuli scores must be considered.

Despite the fact that no particular emphasis was placed on the oral hygiene of the participants, others have found that the level of oral hygiene tends to improve for subjects in similar studies, and that this can affect the degree of hypersensitivity.³² The potential for positive results from the improved plaque control alone was not ascertained in the current study, nor was any effort made to control diet. Both factors could confound results, and should be controlled in any large-scale follow-up study.

Sumi ink was used as an absorbance initiator for both sites. The potential for this substance to decrease sensitivity should be considered. However, its primary function was to increase laser absorbance during the modification

of the dentin surface with the Nd:YAG laser. The initiator is not absorbed by the He:Ne laser, and there was no effect on the dentin surface.

Consideration must also be given to the potential of the He:Ne laser beam to have had an actual treatment effect in the current study, since the He:Ne sites experienced equal desensitization to the He:Ne plus Nd:YAG sites. The effect of low intensities of monochromatic red He:Ne laser irradiation on caries activity has been studied. A highly pronounced tendency in caries reduction was noted one to two years following treatment.³³ It has been observed that a 632.8 nm He:Ne laser has an inhibitory effect on the growth of dental plaque in hamsters.³⁴ Possibly, although there is no observable surface modification of the dentin using the He:Ne laser, it could have the effect of decreasing hypersensitivity.

The subjects' evaluation of perceived pain was based on the visual analog scale. The measurements were analyzed based on the subjects' ability to rank pain on a scale from 0 to 10, where each increment is equal and 0 refers to no discomfort and 10 to intolerable pain. The subjects' subjectivity and desire to avoid the discomfort caused by the stimuli may have played a role in the results of the study.

Since the purpose of treating hypersensitivity is to eliminate the symptoms elicited by everyday stimuli, the subjects' verbal feedback following treatment may be useful. Twelve subjects reported that sensitivity to cold water, ice and flossing had been eliminated or reduced for one or both sites following treatment. The degree of discomfort experienced by subjects to "laser treatment" ranged from two to 10, with a mean value of 5.3 on the VAS. When asked, all subjects stated that they would have laser treatment carried out again.

Conclusion

Through the use of the Nd:YAG laser, dentinal sensitivity to tactile and thermal stimulation was reduced by 61 per cent and 63 per



cent respectively with the He:Ne laser, and by 61 per cent and 58 per cent respectively with the He:Ne + Nd:YAG laser. Therefore, it is believed that the use of surface modification to reduce fluid movement at the dentin is not the sole factor in desensitizing teeth. Although the lasers used in this study decreased dentin hypersensitivity, both neurologic and physical components need to be considered for the complete treatment of root surface hypersensitivity. ■

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References

1. Dowell, P. and Addy, M. Dentine hypersensitivity: A review. I. Aetiology, symptoms and theories of pain production. *J Clin Periodont* 10:341-350, 1983.
2. Graf, H. and Galasse, R. Morbidity, prevalence and intra-oral distribution of hypersensitive teeth. *J Dent Res* 56:2(A162), 1977.
3. Greenhill, J.D. and Pashley, D.H. The effects of desensitizing agents on the hydraulic conductance of human dentin in vitro. *J Dent Res* 60:686-698, 1981.
4. Pashley, D.H., O'Meara, J.A. and Kepler, E.E. Dentin permeability. Effects of desensitizing dentifrices in vivo. *J Periodont* 55:522-525, 1984.
5. Absi, E.G., Addy, M. and Adams, D. Dentin hypersensitivity. A study of the patency of dentin tubules in sensitive and non-sensitive cervical dentine. *J Clin Periodont* 14:280-282, 1987.
6. Haugen, E. and Johansen, J.R. Tooth hypersensitivity after periodontal treatment: A case report including

- SEM studies. *J Clin Periodont* 15:399-401, 1988.
7. Brännstrom, M.L. The surface of sensitive dentin. *Odont Rev* 16:293-299, 1965.
8. Pashley, D.H., Livingston, M.J. and Reeder, O.W. Effects of the degree of tubule occlusion on the permeability of human dentine in vitro. *Arch Oral Biol* 23:1127-1133, 1978.
9. McFall, W.T. A review of the active agents available for treatment of dentinal hypersensitivity. *Endo Dent Traumatol* 1:141-149, 1986.
10. Brännstrom, M.L., Johnson, G. and Nordenvall, K.J. Transmission and impregnation for the desensitization of dentin. *JADA* 99:612-618, 1979.
11. Green, B.L., Green, M.L. and McFall, W.T. Calcium hydroxide and potassium nitrate as desensitizing agents. *J Periodont* 48:667-669, 1977.
12. Laufer, B.F., Mayer, I. and Gedali, I. Fluoride uptake and fluoride residual of fluoride-treated human root dentin in vitro, determined by chemical, SEM, and X-ray diffraction analysis. *Arch Oral Biol* 26:159-163, 1981.
13. Dedrich, D.N., Zakariasen, K.L. and Tulip, J. Scanning electron microscope analysis of canal wall dentin following neodymiumyttrium-aluminum-garnet laser irradiation. *J Endodont* 10:428-433, 1984.
14. Adrian, J.C., Berner, J.L. and Sprague, W.G. Laser and the dental pulp. *JADA* 83:113, 1971.
15. Adrian, J.C. Pulp effects of neodymium laser: A preliminary report. *Oral Surg* 44:301-305, 1977.
16. Shoji, S., Nakamura, M. and Huriuchi, H. Histopathological changes in dental pulps irradiated by Coz laser: a preliminary report on laser pulpotomy. *J Endodont* 11:379-381, 1985.
17. Zakariasen, K.L., Barron, J. and Boran, T.L. Temperature changes across CO₂-lased dentin during multiple exposures. Proceedings of Laser Surgery. Advanced Characterization, Therapeutics, and Systems. 11:SPIE Vol. 1200, 1990.
18. Stanley, H.R. Design for a human pulp study. *Oral Surg* 25:633-647, 1968.
19. Goodis, H.E., White, J.M., Rose, C.M. et al. Dentin surface modification by the Nd:YAG laser. Transactions of the Academy of Dental Materials 2:246-247, 1989.
20. White, J.M., Goodis, H.E. and Rose, C.M. Effect of Nd:YAG laser treatments on hydraulic conductance of dentin. *J Dent Res* 69:Abst 481, 1990a.
21. White, J.M., Goodis, H.E., Rose, C.M. et al. Effects of Nd:YAG laser on pulp of extracted human teeth. *J Dent Res* 69:300 Abst 15, 1990b.
22. Ohnhaus, E.E. and Adler, R. Methodological problems in the measurement of pain: A comparison between

- the verbal rating scale and the visual analog scale. *Pain* 1:379-384, 1975.
23. Grossman, L.E. A systematic method for the treatment of hypersensitive dentin. *JADA* 22:582-602, 1935.
24. Brännstrom, M.L., Linden, A. and Strom. The hydrodynamics of dentin and pulp fluid: Its significance in relation to dental pain. *Caries Res* 1:310-317, 1967.
25. Tani, Y. and Kawada, H. Effects of laser irradiation on dentin. I. Effect on smear layer. *Dent Mat J* 6:127-134, 1987.
26. Outhwait, W.C., Livingston, M.J. and Pashley, D.H. Effects of changes in surface area, thickness, temperature and post-extraction time on human dentine permeability. *Arch Oral Biol* 21:599-603, 1976.
27. Merchant, V.W., Livingston, M.J. and Pashley, D.H. Dentin permeation: Comparison of diffusion with filtration. *J Dent Res* 56:1161-1164, 1977.
28. Pashley, D.H., Kehl, T. and Pashley, E. Comparison of in vitro and in vivo dog dentin permeability. *J Dent Res* 60:763-768, 1981.
29. Zach, L. and Cohen, G. Pulp response to externally applied heat. *Oral Surg* 19:515-530, 1965.
30. Brännstrom, M.L. A Hydrodynamic Mechanism in the Transmission of Pain Producing Stimuli through the Dentin. Anderson, D.N. (ed). *Sensor Mechanism in Dentin*, Oxford, Pergamon Press, 1962, pp. 37-70.
31. Tarbet, W.J., Silverman, G., Fratarcangelo, P.A. et al. Home treatment for dentinal hypersensitivity: A comparative study. *JADA* 105:227-230, 1982.
32. Chasens, A. and Kaslick, R.S. (eds). Mechanism of Pain and Sensitivity in the Teeth and Supporting Tissues: Proceedings of a Symposium. Hackensack, N.J., Farleigh Dickinson University, 1973.
33. Sluzhaev, I.F. and Kuzakova, G.M. The effect of helium-neon light on the degree of dental caries in children on an outpatient register. *Stomatologiya* 68:58-60, 1989.
34. Iwase, T., Saito, T., Nara, Y. et al. Inhibitory effect of He:Ne laser on dental plaque deposition in hamsters. *J Periodont Res* 24:282-283, 1989.



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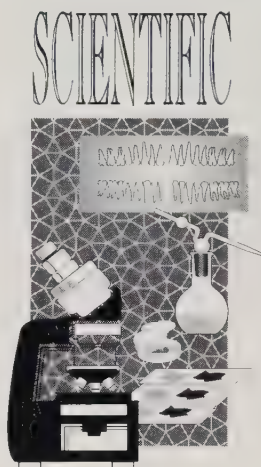
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PARTICIPATION

**HELP AVOID
THE BELLYACHING
OVER PAIN...**





La seringue auto-aspirante en anesthésie locale

Jean-Yves Turcotte, DDS, MRCD(C)

Jean-Pierre Dufour, DD

SOMMAIRE

Pour le dentiste, l'administration de solutions anesthésiques est un geste de tous les jours. Il est toutefois très important d'éviter l'injection intravasculaire. Il existe, sur le marché, différentes seringues dentaires, certaines avec harpon et d'autres auto-aspirantes. Nous avons vérifié l'efficacité de deux seringues auto-aspirantes, dont l'une telle que présentée sur le marché et l'autre à laquelle nous avons apporté une légère modification.

Mots clés: Seringue auto-aspirante, évaluation, seringue, anesthésie locale.

ABSTRACT

Dentists routinely inject local anesthetic solutions in their daily practice. However, it is important not to inject intravasculary. Consequently, manufacturers offer two types of dental syringes: one with a mechanical aspirating device (harpoon) and the other with a self-aspirating mechanism. We have verified the efficacy of a self-aspirating syringe as presented on the market and another self-aspirating syringe which we lightly modified.

Key words: Self-aspirating syringe, performance, syringe, local anesthesia.

Historique

Dans les années 60, la seringue auto-aspirante est apparue sur le marché. En

1969, une évaluation en laboratoire en avait été faite au Centre médical de la Défense nationale par Turcotte et Fitzgibbon. Cette évaluation, effectuée sur le modèle Astra, démontra que l'aspiration était erratique. Avec l'avènement des carpules de plastique, nous avons voulu vérifier à nouveau les dites seringues.

Principe de fonctionnement

Le principe est basé sur le fait que le diaphragme de la carpule repose sur une saillie et que, lors de l'injection, il se déforme puis, qu'il reprend sa forme lorsque la pression est relâchée, faisant reculer la carpule. C'est ce qui provoque l'aspiration.

Hypothèse

L'aspiration est fonction de la déformation du diaphragme et la déformation du diaphragme est fonction de la résistance du piston sur les parois de la carpule. Donc, tout le mécanisme de la seringue repose sur la carpule elle-même. C'est pourquoi nous avons fait une étude comparative sur l'efficacité de l'aspiration avec cartouches de verre et celle avec cartouches de plastique. Nous avons tenu compte de certains autres paramètres pouvant avoir un impact sur l'aspiration tels le calibre des aiguilles et la bulle d'azote à l'intérieur des carpules. Nous avons, par la même occasion, testé une modification

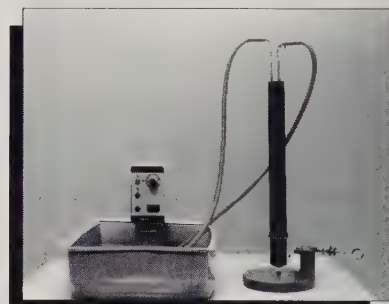


Fig. 1: Cylindre avec sang à 37° C, réchauffé par eau circulant dans un serpentin.

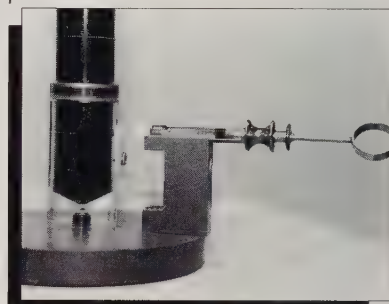


Fig. 2: Gros plan de la seringue auto-aspirante. Pénétration de l'aiguille au site 0.0 mm Hg.

apportée à une seringue pouvant la rendre plus efficace.

Matériel utilisé

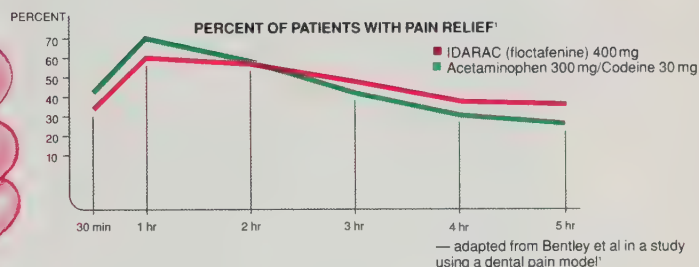
- Une seringue Astra
- Une seringue Miltex modifiée
- Aiguilles 25, 27 et 30
- Carpules de plastique Astra
- Carpules de verre Septodont
- Pompe à bain-marie avec thermostat et élément chauffant
- Cylindre gradué (pression)
- Sang humain

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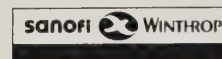
floctafenine

HELPS AVOID THE BELLYACHING OVER PAIN[†]

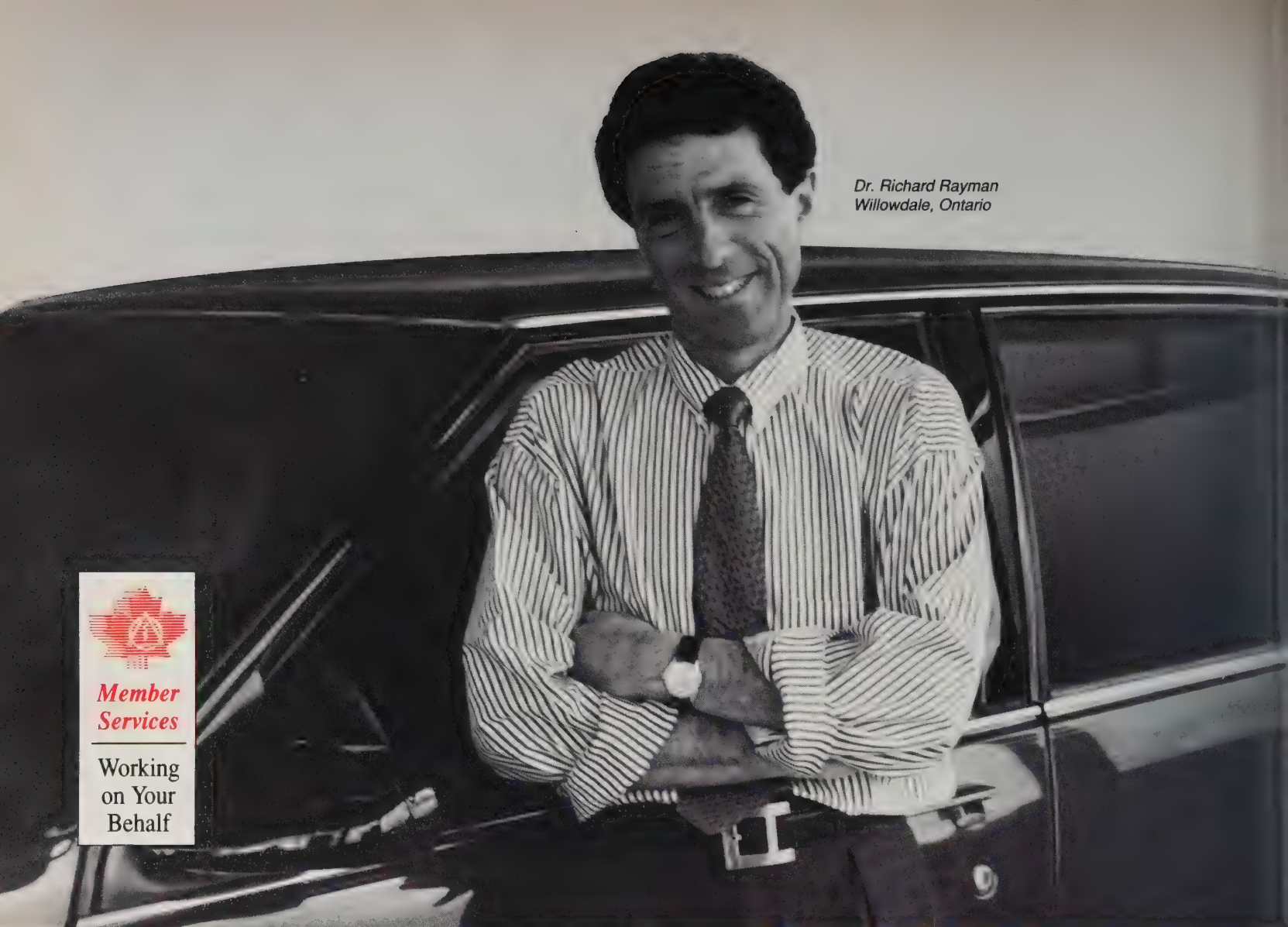
[†] Idarac (floctafenine) is a nonsteroidal anti-inflammatory drug indicated for short term use in acute pain of mild to moderate severity.



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Méthode

Lors de notre expérience nous avons tenu compte de différentes variables pouvant affecter le comportement hydraulique du sang. C'est ainsi que la pression, la température et la dilution ont été contrôlées.

La pression était obtenue à l'aide d'un cylindre contenant du sang (la densité du sang est de 1.0) et chaque millimètre de mercure de pression correspondait à 13.5 millilitres de sang. Ce cylindre était muni d'un orifice près de sa base, correspondant au niveau zéro. L'orifice était fermé par un bouchon de caoutchouc au travers duquel étaient pratiquées les injections et qui était remplacé au besoin.

La température était maintenue

grâce à un serpentin dans lequel circulait de l'eau à 37 ± 1 C.

Le sang était vidangé dès que la dilution atteignait 10 p. cent. La viscosité du sang chez les individus normaux pouvant varier de 30 p. cent, nous avons considéré 10 p. cent comme une dilution acceptable.

L'expérience s'est déroulée comme suit : sur une seringue Astra furent montées, tour à tour, des aiguilles 25, 27 et 30. Pour chaque aiguille, le contenu de cinq carpules de verre et de cinq carpules de plastique fut injecté dans le système. Trois lectures furent faites pour chaque carpule. Après avoir amorcé le mouvement du piston, une lecture était prise au début, au un tiers et au deux tiers de l'injection et ce, aux pressions 1.5, 5.0,

10, 15, 20, 25, 30 et 35 mm de hg. La même séquence fut calibrée avec une seringue Miltex modifiée, avec les cinq carpules de verre seulement, cette modification ne visant qu'à compenser le manque de friction du verre, c'est-à-dire de mimer, avec la carpule de verre, le fonctionnement de la carpule de plastique.

Avant chaque essai, la bulle à l'intérieur des carpules était réduite le plus possible, sauf dans une série d'essais pour vérifier l'importance de la bulle où elle a été soigneusement gardée. Ces essais ont été faits avec des aiguilles 25 et 27 et des carpules de plastique à 5, 10 et 15 mm de hg. Nous n'avons pas utilisé dans ce cas l'aiguille de calibre 30 puisqu'elle assurait déjà un fonctionnement erratique et, par con-

TABEAU I

Pression : 1.5 mm de mercure

Ser. A		Aig. 30		Carp. V		Ser. A		Aig. 27		Carp. V		Ser. A		Aig. 25		Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3		
1	±	0	±	1	0	0	0	1	0	0	0	1	0	0	0		
2	0	0	+	2	0	0	0	2	0	0	0	2	0	0	0		
3	±	±	±	3	0	0	0	3	0	0	0	3	0	0	0		
4	0	0	+	4	0	0	0	4	0	0	0	4	0	0	0		
5	0	0	0	5	0	0	0	5	0	0	0	5	0	0	0		
6				6				6				6					

TABEAU II

Pression : 1.5 mm de mercure

Ser. A		Aig. 30		Carp. P		Ser. A		Aig. 27		Carp. P		Ser. A		Aig. 25		Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3		
1	+	+	+	1	+	+	+	1	+	+	+	1	+	+	+		
2	+	+	+	2	+	+	+	2	+	+	+	2	+	+	+		
3	+	+	+	3	+	+	+	3	+	+	+	3	+	+	+		
4	0	0	0	4	+	+	+	4	+	+	+	4	+	+	+		
5	0	0	0	5	+	+	+	5	+	+	+	5	+	+	+		
6				6				6				6					

A = seringue Astra
M = seringue Miltex modifiée
V = carpule de verre
P = carpule de plastique

TABEAU III

Pression : 1.5 mm de mercure

Ser. M		Aig. 30		Carp. V		Ser. M		Aig. 27		Carp. V		Ser. M		Aig. 25		Carp. V			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	0	0	±	1	+	+	+	1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	±	±	+	2	+	+	+	2	+	+	+	2	+	+	+
3	±	±	±	3	+	+	+	3	+	+	+	3	+	+	+	3	+	+	+
4	+	0	±	4	+	+	+	4	0	+	+	4	0	+	+	4	0	+	+
5	0	0	±	5	+	+	+	5	+	+	+	5	+	+	+	5	+	+	+
6				6				6				6				6			

TABEAU IV

Pression : 5 mm de mercure

Ser. A		Aig. 30		Carp. V		Ser. A		Aig. 27		Carp. V		Ser. A		Aig. 25		Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3		
1		0	0	1	0	0	0	1	0	0	0	1	0	0	0		
2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0		
3	0	0	0	3	0	0	0	3	0	0	0	3	0	0	0		
4	0	0	0	4	0	0	0	4	0	0	0	4	0	0	0		
5	0	0	0	5	0	0	0	5	0	0	0	5	0	0	0		
6				6				6				6					

+= aspiration
0 = absence d'aspiration
± = aspiration non détectable en clinique
(que l'opérateur en situation clinique ne verrait probablement pas)



NARCOTIC EFFICACY WITHOUT NARCOTIC DRAWBACKS

TORADOL® (ketorolac tromethamine) 10 mg tablets

TORADOL® IM (ketorolac tromethamine injection) 10 mg/mL, 15 mg/mL or 30 mg/mL intramuscular injection

THERAPEUTIC CLASSIFICATION: Analgesic Agent

ACTION:

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occurred at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 2.4 and 9.0 hours in healthy adults, while in elderly subjects (mean age = 72 years), it ranged between 4.3 and 7.6 hours. A high fat meal decreased the rate, but not the extent, of absorption of oral ketorolac tromethamine.

The use of an antacid had no effect on the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The hemodynamics of anaesthetized patients were not altered by parenteral administration of Toradol.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9) (serum creatinine 1.9-5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS:

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopaedic and gynecological operative procedures.

CONTRAINDICATIONS:

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: As with other NSAIDs, Toradol also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system. Severe and fatal reactions have occurred in such individuals.

WARNINGS:

The long-term administration of Toradol (ketorolac tromethamine) is not recommended. The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

LONG-TERM USE OF TORADOL: The oral use of Toradol 10 mg QID on a long-term basis is associated with more gastrointestinal tract adverse effects than is ASA 650 mg QID.

In a clinical trial in 823 patients with chronic pain states comparing Toradol tablets 10 mg QID (553 patients) with ASA 650 mg QID (270 patients), during the first week there was a 2.4% dropout rate because of upper GI complaints in the Toradol tablets treated patients as compared with 0.4% rate in the ASA treated group. After the first 2 weeks, the dropout rates due to GI pain or discomfort were comparable in both treatment groups. The time-adjusted percentages, which are not statistically significantly different, of patients who developed ulcers or upper GI bleeding are as follows:

	CUMULATIVE OCCURRENCE	ASA
INTERVAL	KETOROLAC	
≤ 3 months	0.69*	0*
≤ 6 months	1.59*	0.73*

*There was no statistically significant difference between ketorolac and ASA at either of the intervals tested.

PHYSICIANS SHOULD CAREFULLY WEIGH THE POTENTIAL RISKS AND BENEFITS OF USING TORADOL TABLETS ON A LONG-TERM BASIS. PATIENTS SHOULD BE INSTRUCTED TO WATCH FOR SIGNS OF SERIOUS GI ADVERSE EVENTS AND THEY SHOULD BE MONITORED MORE CLOSELY THAN IF THEY WERE ON ANOTHER NSAID.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. If Toradol is to be administered to patients who have coagulation disorders or who are receiving drug therapy that interferes with haemostasis, careful observation is advised.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Other NSAIDs: Ketorolac tromethamine is not recommended for concurrent use with other NSAIDs because of the potential for additive side effects.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg QID oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Labour: Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of NSAIDs on uterine contraction and fetal circulation.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs (See WARNINGS and PRECAUTIONS), extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS:

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase. Toradol is not an anesthetic agent and possesses no sedative or anxiolytic properties.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Renal Effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with (ketorolac tromethamine). Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, the following precautions are indicated for patients with: **Severely impaired renal function** (serum creatinine values greater than 5 mg/dL, 442 µmol/L): Toradol is not recommended; **Moderately impaired renal function** (serum creatinine values ranging from 1.9 to 5.0 mg/dL, 168 to 442 µmol/L) - The total daily dose of ketorolac tromethamine should be reduced by half. In these patients the rate of ketorolac tromethamine clearance was reduced to approximately half of normal. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow. Predisposing factors include sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Hepatic Effects: Meaningful elevations (greater than 3 times normal) of serumtransaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxalacetic (SGOT or AST)), occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and Electrolyte Balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other NSAIDs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Patients on full anti-coagulation therapy (e.g. heparin or dicumarol derivatives) may be at increased risk of bleeding if given Toradol concurrently. Thus, the benefit should be weighed against this risk. The concomitant use of Toradol and heparin (5000 U s.c. BID) appears to be associated with less risk (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections may be increased. In post-marketing experience, postoperative wound haemorrhage has been reported with the use of Toradol. Therefore, caution should be exercised when strict haemostasis is critical. Toradol IM is

not recommended as a pre-operative or intra-operative medication because of the risk of excessive bleeding. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS:

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase).

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

ADVERSE EVENTS:

TORADOL TABLETS: Short-Term Patient Studies - The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post-operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related. **Incidence between 4 and 9%:** **Nervous system** - somnolence, insomnia; **Digestive system** - nausea. **Incidence between 2 and 3%:** **Nervous system** - nervousness, headache, dizziness; **Digestive system** - diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body as a whole** - fever. **Incidence 1% or Less:** **Nervous system** - abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations; **Digestive system** - anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat; **Body as a whole** - asthenia, pain, back pain; **Cardiovascular system** - vasodilatation, palpitation, migraine, hypertension; **Respiratory system** - cough increased, rhinitis, dry nose; **Musculo-skeletal system** - myalgia, arthralgia; **Skin and appendages** - rash, urticaria; **Special senses** - blurred vision, ear pain; **Urogenital system:** dysuria.

Long-Term Patient Study - The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol. **Incidence between 10 and 12%:** **Digestive system** - dyspepsia, gastrointestinal pain.

Incidence Between 4 and 9%: **Digestive system** - nausea, constipation; **Nervous system** - headache. **Incidence Between 2 and 3%:** **Digestive system** - diarrhea, flatulence, gastrointestinal fullness, peptic ulcers; **Nervous system** - Dizziness, somnolence; **Metabolic/Nutritional disorder** - edema. **Incidence 1% or Less:** **Digestive system** - eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth; **Nervous system** - abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia; **Special senses** - tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder; **Metabolic/Nutritional disorder** - Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia; **Skin and appendages** - pruritus, rash, burning sensation skin; **Body as a whole** - asthenia, pain, back pain, face edema, hernia; **Musculo-skeletal system** - arthralgia, myalgia, joint disorder; **Cardiovascular system:** chest pain, chest pain substernal, migraine; **Respiratory system** - dyspnea, asthma, epistaxis; **Urogenital system** - hematuria, increased urinary frequency, oliguria, polyuria; **Hemic and lymphatic** - Anemia, purpura.

TORADOL IM: The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (n=660) received either single 30 mg doses (n=151) or multiple 30 mg doses (n=509) over a time period of 5 days or less for pain resulting from surgery.

These reactions may or may not be drug related. **Incidence Between 10 and 13%:** **Nervous System** - somnolence; **Digestive system** - Nausea. **Incidence Between 4 and 9%:** **Nervous system** - headache; **Digestive system** - vomiting; **Injection site** - injection site pain. **Incidence Between 2 and 3%:** **Nervous System** - sweating, dizziness; **Cardiovascular system** - vasodilatation. **Incidence 1% or Less:** **Nervous system** - insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paraesthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation; **Digestive system** - flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis; **Cardiovascular system** - hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing; **Injection site** - injection site reaction; **Body as a whole** - asthenia, fever, back pain, chills, pain, neck pain; **Special senses** - taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage; **Musculo-skeletal system** - myalgia, twitching; **Respiratory system** - asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis; **Skin and appendages** - pruritus, rash, subcutaneous hematoma, skin disorder; **Urogenital system** - dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis; **Metabolic/nutritional disorders** - edema, hypokalemia, hypovolemia **Hemic and lymphatic system** - anemia, coagulation disorder, purpura.

Post-Marketing Experience: The following post-marketing adverse experiences, although rare (1% or less), have been reported for patients who have received either formulation of Toradol.

Renal events - acute renal failure, flank pain with or without haematuria and/or azotemia; **Hypersensitivity reactions:** bronchospasm, laryngeal edema, hypotension, flushing, rash, and anaphylactoid reactions, such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal events** - gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation; **Hematologic events** - postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia; **Central nervous system** - convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss; **Cardiovascular** - pulmonary edema; **Dermatology** - Lyell's syndrome, Stevens - Johnson syndrome, exfoliative dermatitis, maculopapular rash.

OVERDOSAGE: The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

DOSAGE AND ADMINISTRATION:

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. Toradol is recommended for short-term use only, i.e., for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. It is recommended that the administration of Toradol IM be limited to short-term therapy (not over 5 days) and the total daily dose should not exceed 120 mg.

This is because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time. In the initial post-operative period, more frequent dosing (e.g. every 2 hours) may be employed but the total daily dosing should not exceed 120 mg/day. If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients under 50 kg, over age 65 years, or with less severe pain at baseline: the lower end of the dosage range (10-15 mg 4 times a day) is recommended.

Impaired Renal Function - Moderate - In patients with impaired renal function (serum creatinine values ranging from 1.9 to 5.0 mg/dL or 168 to 442 µmol/L), the total daily dose of Toradol should be reduced by half.

Severe - In patients with severely impaired renal function (serum creatinine values greater than 5 mg/dL, or 442 µmol/L) Toradol is not recommended.

Conversion from Parenteral to Oral Therapy: Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. Toradol IM should be replaced by an oral analgesic as soon as feasible. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg on the day the change of formulation is made. Subsequent oral dosing should not exceed the recommended daily maximum of 40 mg.

Directions for Use of the Prefilled Syringes: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal. (You will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly. Single use only. Discard Unused Portions. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use. Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations:

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms: Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets containing ketorolac tromethamine, microcrystalline cellulose, lactose and magnesium stearate with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Toradol IM is also available in 1 mL syringes (1/box) containing 15 or 30 mg/mL.

Product Monograph available on request.

References: 1. Compendium of Pharmaceuticals and Specialties, 27th Edition, 1992. 2. TORADOL Product Monograph, Syntex Inc., Dec. 1992. 3. Lopez M et al. *Pharmacologist* 1987;29:136. 4. Yee JP et al. *Pharmacother* 1986; 6(5):253-61. 5. Brown CR et al. *Pharmacother* 1990; 10(6 Pt 2):45S-50S. 6. O'Hara DA et al. *Clin Pharm Ther* 1987; 41:556-61. 7. Fragen RJ, Data on File, Syntex Inc., Document CL3837, 1987. 8. Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. 9. Stanski DR et al. *Pharmacother* 1990; 10(6 Pt 2):40S-44S. 10. Data on File, Syntex Inc., Document #90027-1, 1989. 11. Rubin P et al. *Clin Pharmacol Ther* 1987; 41(2):182. 12. Bravo BLJC et al. *Eur J Clin Pharmacol* 1988; 35: 491-4. 13. Stahlgren L, Data on File, Syntex Inc., Document RS-37619, 1991. 14. Greer IA, *Pharmacother* 1990; 10(6 Pt 2):71S-76S. 15. Spowart K et al. *Thromb Haemost* 1988; 60:382-6. 16. Data on File, Syntex, Document #90027-2, 1989. 17. Forbes JA et al. *Pharmacother* 1990;10(6 Pt 2):77S-9. 18. Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):94S-105S. 19. Yee JP et al. Data on File, Syntex Inc., Document CL4855, 1986. 20. Goldblum R and Chen SS. Data on File, Syntex Inc., Document CL5363, 1990. 21. Data on File, Syntex Inc., Document #90027-3, May 1990. 22. Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. 23. Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-341. 24. Cutting CJ, et al. Data on File, Syntex Inc., Document CL4740, 1989. 25. Diebschlag W and Nocker W, Data on File, Syntex Inc., Document CL5468, 1989. 26. Molinie J et al. Data on File, Syntex Inc., Document CL4624, 1988. 27. Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. 28. Conrad KA et al. *Clin Pharmacol Ther* 1988; 43:542-6. 29. Harden NR et al. *Headache* 1991;31:463-4. 30. American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain* 3rd edition, 1992. 31. Beaver WT. *Pharmacotherapy* 1990;10(6 Pt 2):29S. 32. Doyle DJ, Data on File, Syntex Inc., 1991. 33. Fricke JR et al. *J Clin Pharmacol* 1992;32:376-84. 34. *IMS Year in Review* 1991, IMS Compuscript Data, June 1992. 35. Mangioni C et al. Data on File, Syntex Inc., Document CL4899, 1980. 36. Huffteman W et al. Data on File, Syntex Inc., Document CL4882. 37. Nedelman P et al. Data on File, Syntex Inc., Document CL3635, 1986. 38. Bloomfield S et al. Data on File, Syntex Inc., Document CL3658, 1986. 39. Sunshine A. Data on File, Syntex Inc., Document CL3674, 1986. 40. Data on File, Syntex Inc., 1992. 41. Rooks WH et al. *Agents and Actions* 1982;12: 684-690. 42. Rooks WH et al. *Drugs under Experimental and Clinical Research* 1985; 11: 479-492. 43. Camu F et al. *9th World Congress of Anesthesiologists*, Abstracts Volume 1: Abstract A0167. 44. Librach SL et al. *The Pain Manual* 1991; 26-30. 45. United Nations International Narcotics Control Board. *Narcotic Drugs* 1990:106, 115 and 118. 46. IMS Canada, August 1992.

Toradol Information Line: 1-800-561-5481.



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séquent, n'aurait pas permis d'isoler le facteur « bulle. » De plus, nous n'avons pas utilisé les carpules de verre parce qu'elles ne fonctionnaient pas avec une seringue standard et parce que la modification apportée à la seringue ne fait que compenser le manque de friction, autrement dit, leur apporte le même comportement qu'une carpu-
le de plastique. Puisqu'il n'y avait pas de différence significative entre les différentes pressions, nous nous sommes donc limités aux pressions de cinq, 10 et 15 mm hg.

Résultat

Les données ayant été recueillies de façon visuelle, les résultats n'ont pas été analysés statistiquement mais plutôt qualitativement. Regardons les résultats pour chacun des paramètres.

- Avec les aiguilles 25 et 27, l'as-

piration est positive ou négative de façon constante pour un même type de carpu-
le (verre-plastique).

- L'aiguille 30, quant à elle, fonctionne de façon erratique.
- La pression : Il n'y a pas de différence significative entre les différentes pressions. Les carpules de verre ne permettent pas l'auto-aspiration.
- Les carpules de plastique permettent l'auto-aspiration. Dans les deux cas, elles sont assez constantes.
- La bulle : compte tenu que le fonctionnement de la seringue auto-aspirante repose sur la déformation du diaphragme (donc sur le volume *minime* déplacé par cette déformation), la bulle d'azote, de par sa compressibilité, annule ce volume. La présence et la dimension de la bulle d'azote à l'intérieur de la

carpu-
le ont donc un impact déterminant sur la réalisation de l'auto-aspiration.

Discussion

Durant toute l'étude, nous avons utilisé la seringue comme la plupart des praticiens que nous avons questionnés, c'est-à-dire sans nous servir du disque pour le pouce. L'utilisation de ce disque nécessite un changement dans la façon de tenir la seringue pendant l'injection, ce qui n'est pas pratique et peu de dentistes le font. Bref, nous avons manipulé la seringue comme les usagers le font en clinique. Si on examine le système d'auto-aspiration, on voit qu'il dépend essentiellement de deux facteurs :

Facteur 1 : une friction suffisante du piston sur les parois de la carpu-
le pour entraîner une déformation suffisante du diaphragme de la

TABEAU V

Pression : 5 mm de mercure

Ser. A	Aig. 30	Carp. P		Ser. A	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	0	0	0	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	+	+	+	5	0	0	0	5	+	+	+
6	+	+	+	6				6			

TABEAU VI

Pression : 5 mm de mercure

Ser. M	Aig. 30		Carp. V		Ser. M	Aig. 27		Carp. V		Ser. M	Aig. 25		Carp. V	
Ess.	Déb.	1/3	2/3		Ess.	Déb.	1/3	2/3		Ess.	Déb.	1/3	2/3	
1	+	+	+		1	+	+	+		1	+	+	+	
2	+	+	+		2	+	+	+		2	+	+	+	
3	+	+	+		3	+	+	+		3	+	+	+	
4	+	+	+		4	+	+	+		4	+	+	+	
5	+	+	+		5	+	+	+		5	+	+	+	
6					6					6				

TABEAU VII

Pression : 10 mm de mercure

Ser. A	Aig. 30	Carp. V		Ser. A	Aig. 27	Carp. V		Ser. A	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	±	±	±	1	0	0	0	1	0	0	0
2	0	0	0	2	0	0	0	2	0	0	0
3	0	0	0	3	0	0	0	3	0	0	0
4	+	+	+	4	0	0	0	4	0	0	0
5	0	0	0	5	0	0	0	5	0	0	+
6	+	+	+	6				6			

TABEAU VIII

Pression : 10 mm de mercure

Ser. A	Aig. 30	Carp. P		Ser. A	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	0	0	0	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	0	0	0	5	+	+	+	5	+	+	+
6	+	+	+	6				6			

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carpule qui devrait être de qualité telle qu'il reprendrait sa forme originale.

Facteur 2 : la présence de la bulle d'azote qui, par sa compressibilité, compense la déformation du diaphragme et empêche l'aspiration.

La carpule de verre ne fournit pas la friction suffisante pour l'auto-aspiration. Astra, en mettant sur le marché la carpule de plastique, a réglé (peut-être à son insu) le problème de la friction. La modification apportée à la seringue Miltex visait à compenser le manque de friction des carpules de verre. Cette modification fonctionne très bien et assure l'aspiration avec les cartouches en verre.

Recommandations

➤ Pour le dentiste

Celui qui utilise les seringues auto-aspirantes devrait le faire avec des carpules de plastique et

réduire la bulle avant l'injection. Voici comment: tenir la seringue verticalement pour faire monter la bulle près de l'aiguille, reculer la carpule de façon à ce que le bout de l'aiguille soit dans la partie supérieure de la bulle puis évacuer la bulle en amorçant le mouvement du piston. Cela peut paraître compliqué mais devient vite automatique.

Celui qui préfère la douceur de fonctionnement des carpules de verre doit utiliser une seringue à harpon, les seringues auto-aspirantes ne fonctionnant pas avec ces carpules.

La combinaison carpule de plastique, seringue auto-aspirante et aiguille de calibre 30, en raison de l'aspiration erratique, est à déconseiller.

➤ Pour les manufacturiers

- Si l'on produisait des carpules de plastique sans bulle, on mettrait

sur le marché le système le plus simple et le plus fiable qui soit, si ce n'est pour les aiguilles de calibre 30.

- Il faudrait s'assurer que le diaphragme retourne toujours à sa forme originale, suite à de multiples aspirations.
- Pour que l'auto-aspiration soit possible avec des carpules de verre, ces dernières devraient être sans bulle et utilisées avec des seringues modifiées du genre de celle employée pour notre expérience.

Bibliographie

1. Meechan, J.G. A laboratory investigation of a new design of self-aspirating syringe. *J Dent* 18:163-166, 1990.
2. Meechan, J.G., Blair, G.S. et McCabe, J.F. Local anaesthesia in dental practice II. A laboratory investigation of a self-aspirating system. *Br Dent J* 159:109, 1985.

TABEAU IX

Pression: 10 mm de mercure

Ser. M Aig. 30 Carp. V				Ser. M Aig. 27 Carp. V				Ser. M Aig. 25 Carp. V			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	+	+	+	5	+	+	+	5	+	+	+
6				6				6			

TABEAU X

Pression: 15 mm de mercure

Ser. A Aig. 30 Carp. V				Ser. A Aig. 27 Carp. V				Ser. A Aig. 25 Carp. V			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	±	0	0	1	0	0	0	1	0	0	0
2	0	0	0	2	0	0	0	2	0	0	0
3	0	0	+	3	0	0	0	3	0	0	0
4	0	0	0	4	0	0	0	4	0	0	0
5	0	0	0	5	0	0	+	5	0	0	0
6				6				6			

TABEAU XI

Pression: 15 mm de mercure

Ser. A Aig. 30 Carp. P				Ser. A Aig. 27 Carp. P				Ser. A Aig. 25 Carp. P			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	+	+	+	5	+	+	+	5	+	+	+
6				6				6			

TABEAU XII

Pression: 15 mm de mercure

Ser. M Aig. 30 Carp. V				Ser. M Aig. 27 Carp. V				Ser. M Aig. 25 Carp. V			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	0	0	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	+	+	+	5	+	+	+	5	+	+	+
6				6				6			

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3. Meechan, J.G., Blair, G.S. et McCabe, J.F. The rotor self-aspirating syringe. A laboratory investigation. *J Dent* 15:34-37, 1987.

4. Petersen, J.K. Efficacy of a self-aspirating syringe. *Int J Oral Maxillofac Surg* 16:241-244, 1987.

5. Lehtinen, R. et Aarnisolo, T. Aspiration in local anesthesia. Comparison between disposable self-aspirating and usual syringes. *Acta Odont Scand* 35:9-

11, 1977.

6. Currah, Lt.-Col., J.R. Comparing frequency aspiration using a self-aspirating syringe and a conventional aspirating syringe. *Ontario Dentist* 63(9):22-25, 1986.

7. Hill, C.M. A Modified Self-Aspirating Syringe. *Br Dent J* 152:354-355, 1982.

8. Crowe, C.W. Self-Aspirating Syringes (Letters). *Br Dent J* 23:317-318, 1985.

9. Meechan, J.G., Blair, G.S. et McCabe,

J.F. Self-Aspirating Syringe (Letters). *Br Dent J* 157:4, 1984.

10. Taylor, A.P. Self-Aspirating Syringe (Letters). *Br Dent J* 157:4, 1984.

11. Dalton, T. Self-aspirating Syringe (Letters). *Br Dent J* 157:5, 1984.

12. Cowan, A. Self-Aspirating Syringe (Letters). *Br Dent J* 157:5, 1984.

13. Forrest, J.O. A Modified Self-Aspirating Syringe (Letters). *Br Dent J* 157(5):49, 1984.

TABLEAU XIII

Pression : 20 mm de mercure

Ser. A	Aig. 30	Carp. V		Ser. A	Aig. 27	Carp. V		Ser. A	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	±	±	±	1	0	0	0	1	0	0	0
2	+	±	+	2	0	0	0	2	0	0	0
3	0	±	+	3	0	0	0	3	0	0	0
4	0	0	0	4	0	0	±	4	0	0	0
5	+	0	+	5	0	0	0	5	0	0	0
6				6				6			

TABLEAU XIV

Pression : 20 mm de mercure

Ser. A	Aig. 30	Carp. P		Ser. A	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	0	+	+	1	+	+	+
2	0	0	0	2	+	+	+	2	+	+	+
3	0	0	0	3	+	+	+	3	+	+	+
4	0	0	0	4	+	+	+	4	+	+	+
5	0	0	+	5	+	+	+	5	+	+	+
6				6				6			

TABLEAU XV

Pression : 20 mm de mercure

Ser. M	Aig. 30	Carp. V		Ser. M	Aig. 27	Carp. V		Ser. M	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	0	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	+	+	+	5	0	+	+	5	+	+	+
6				6				6			

TABLEAU XVI

Pression : 25 mm de mercure

Ser. A	Aig. 30	Carp. V		Ser. A	Aig. 27	Carp. V		Ser. A	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	0	0	0	1	0	0	0	1	0	0	0
2	±	+	+	2	0	0	0	2	0	0	0
3	0	±	0	3	±	±	0	3	0	0	0
4	0	0	0	4	0	0	0	4	0	0	0
5	0	0	0	5	0	±	0	5	0	0	0
6				6				6			

TABLEAU XVII

Pression : 25 mm de mercure

Ser. A	Aig. 30	Carp. P		Ser. A	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	0	0	+	4	±	0	+
5	+	+	0	5	+	+	+	5	+	+	+
6				6				6			

TABLEAU XVIII

Pression : 25 mm de mercure

Ser. M	Aig. 30	Carp. V		Ser. M	Aig. 27	Carp. V		Ser. M	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	+	+	+	5	+	±	±	5	0	+	+
6				6				6			



D^r Jean-Yves Turcotte est professeur et responsable, secteur de chirurgie buccale et maxillo-faciale, faculté de médecine dentaire, Université Laval.

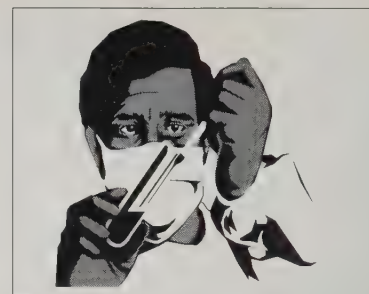
Jean-Pierre Dufour est étudiant de quatrième année, faculté de médecine dentaire, Université Laval.

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Demandes de tirés à part: D^r Jean-Yves Turcotte, Faculté de médecine dentaire, Université Laval, Québec, P.Q., Canada, G1K 7P4.



TABEAU XIX

Pression : 30 mm de mercure

Ser. A	Aig. 30	Carp. V		Ser. A	Aig. 27	Carp. V		Ser. A	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	0	0	0	1	0	0	±	1	0	0	0
2	±	0	0	2	0	0	0	2	0	0	0
3	0	0	0	3	0	0	0	3	0	0	0
4	0	±	±	4	0	0	0	4	0	0	0
5	+	+	+	5	0	0	0	5	0	0	±
6				6				6			

TABEAU XX

Pression : 30 mm de mercure

Ser. A	Aig. 30	Carp. P		Ser. A	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	0	±	±	5	+	+	+	5	+	+	+
6				6				6			

TABEAU XXI

Pression: 30 mm de mercure

Ser. M	Aig. 30	Carp. V		Ser. M	Aig. 27	Carp. V		Ser. M	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	+	+	+	2	+	±	±	2	+	+	+
3	0	±	+	3	+	±	±	3	+	+	+
4	+	+	+	4	+	+	+	4	+	+	+
5	±	±	0	5	+	+	+	5	+	+	+
6				6				6			

TABEAU XXII

Pression : 35 mm de mercure

Ser. A	Aig. 30	Carp. V		Ser. A	Aig. 27	Carp. V		Ser. A	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	0	±	+	1	±	±	+	1	±	0	0
2	+	+	0	2	±	±	±	2	0	0	0
3	+	±	+	3	0	±	0	3	±	±	0
4	±	+	+	4	0	0	±	4	0	0	0
5	±	±	±	5	+	+	+	5	0	0	±
6				6	±	±	±	6			

TABEAU XXIII

Pression : 35 mm de mercure

Ser. A	Aig. 30	Carp. P		Ser. A	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	+	+	+	1	+	+	+	1	+	+	+
2	±	±	±	2	+	+	+	2	+	+	+
3	+	+	+	3	+	+	+	3	+	+	+
4	+	+	+	4	+	±	±	4	+	+	+
5	+	+	+	5	+	+	+	5	+	+	+
6				6				6			

TABEAU XXIV

Pression: 35 mm de mercure

Ser. M	Aig. 30	Carp. V		Ser. M	Aig. 27	Carp. V		Ser. M	Aig. 25	Carp. V	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1	±	±	+	1	+	+	+	1	0	+	+
2	±	±	±	2	+	+	+	2	+	+	+
3	0	0	+	3	+	+	+	3	+	+	+
4	+	+	±	4	+	+	+	4	+	+	+
5	±	+	+	5	+	±	+	5	+	+	+
6				6				6			

TABLEAU XXV

Pression : 5mm de mercure (Bulle d'azote)

Ser. A	Aig. 30	Carp. P		Ser. M	Aig. 27	Carp. P		Ser. A	Aig. 25	Carp. P	
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1				1	+	+	+	1	0	+	+
2				2	+	+	+	2	0	0	0
3				3	±	±	±	3	+	0	+
4				4	0	0	+	4	0	0	0
5				5	0	0	0	5	±	0	0
6				6				6			

TABLEAU XXVI

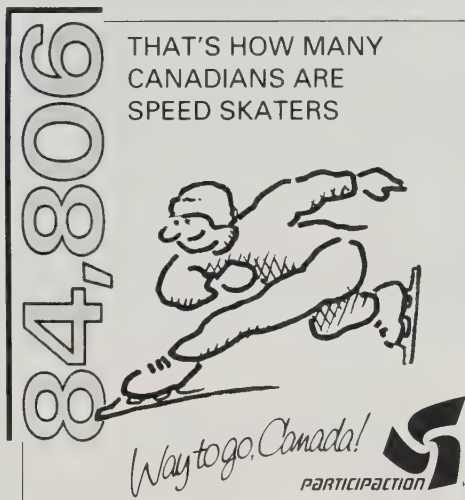
Pression : 10mm de mercure (Bulle d'azote)

Ser. A		Aig. 30		Carp. P		Ser. M		Aig. 27		Carp. P		Ser. A		Aig. 25		Carp. P			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1				1	0	0	0	1	0	0	0	1	0	0	0				
2				2	0	0	0	2	0	0	0	2	0	0	0				
3				3	0	0	0	3	0	0	0	3	0	0	0				
4				4	0	0	0	4	0	0	0	4	0	0	0				
5				5	0	0	0	5	0	0	0	5	0	0	0				
6				6				6				6							

TABLEAU XXVII

Pression : 15mm de mercure (Bulle d'azote)

Ser. A		Aig. 30		Carp. P		Ser. M		Aig. 27		Carp. P		Ser. A		Aig. 25		Carp. P			
Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3	Ess.	Déb.	1/3	2/3
1				1	0	0	0	1	0	0	0	1	0	0	0				
2				2	0	0	0	2	0	0	0	2	0	0	0				
3				3	0	0	0	3	0	0	0	3	0	0	0				
4				4	0	0	0	4	0	0	0	4	0	0	0				
5				5	0	0	0	5	0	0	0	5	0	0	0				
6				6				6				6							



Product Summary

EFFECTIVE, NON-NARCOTIC

IDARAC⁴⁰⁰ mg

(floctafenine)

HELPS AVOID THE BELLYACHING OVER PAIN¹

200 mg and 400 mg tablets

THERAPEUTIC CLASSIFICATION: Analgesic.

ACTIONS:

IDARAC (floctafenine) is an anthranilic acid derivative which has analgesic and anti-inflammatory properties. The analgesic activity is comparable to that of other mild analgesics in the relief of acute pain. Floctafenine has been shown to inhibit *in vitro* biosynthesis of prostaglandins PGE₂ and PGF₂α. Gastrointestinal bleeding determined by daily fecal blood loss, was shown in one clinical trial to be approximately 1.2 mL after 1600 mg/day of floctafenine compared to 10.4 mL after 2400 mg/day of acetylsalicylic acid. In normal volunteers, IDARAC was well absorbed after oral administration and peak plasma levels were attained 1-2 hours after administration and declined in a biphasic manner, with an initial (α phase) half-life of approximately 1 hour and a later (β phase) half-life of approximately 8 hours. Floctafenine and its metabolites do not accumulate following oral administration of multiple doses. After oral and intravenous administration of ¹⁴C-labelled IDARAC, urinary excretion accounted for 40% and fecal and biliary excretion accounted for 60% of the recovered radioactivity. The main urinary metabolites are floctafenic acid and its conjugate with minimal amounts of free floctafenine.

INDICATIONS:

IDARAC (floctafenine) is indicated for short-term use in acute pain of mild and moderate severity.

CONTRAINDICATIONS:

IDARAC (floctafenine) is contraindicated in patients with peptic ulcer or any other active inflammatory disease of the gastrointestinal tract, and in patients who have demonstrated a hypersensitivity to the drug.

WARNINGS:

Use in Pregnancy: The use of IDARAC (floctafenine) in

women of child-bearing potential requires that the likely benefit of the drug be weighed against the possible risk to the mother and fetus. Since there is no information on the excretion of floctafenine in breast milk, use of the drug in women who are nursing is not recommended.

Use in Children: The safety and efficacy of IDARAC in children have not been established and therefore its use in this age group is not recommended. The safety and efficacy of long-term use of IDARAC have not been established.

PRECAUTIONS:

IDARAC (floctafenine) should be used with caution in patients with impaired renal function. In clinical trials with IDARAC dysuria, without apparent changes in renal function, was reported. The incidence of dysuria was greater in males than in females and occurred primarily in the first morning voiding. It has not been established whether dysuria is related to dose and/or duration of drug administration. Patients taking anticoagulant medication may be given IDARAC with caution. Alterations in prothrombin time have been observed only in clinical trials where the administration of IDARAC was extended beyond two weeks. IDARAC should be used with caution in patients with a history of peptic ulcer or other gastrointestinal lesions.

ADVERSE REACTIONS:

The most commonly occurring side effects reported during IDARAC (floctafenine) therapy were:

Central Nervous System: Drowsiness, dizziness, headache, insomnia, nervousness, irritability.

Gastrointestinal System: Nausea, diarrhea, abdominal pain or discomfort, heartburn, constipation, abnormal liver function, gastrointestinal bleeding.

Urogenital System: Dysuria, burning micturition, polyuria, strong smelling urine, urethritis and cystitis.

Other less frequently occurring side effects were: tinnitus, blurred vision, dry mouth, thirst, bitter taste, anorexia, stomach cramps, flatulence, hot flushes and sweating, tachycardia, weakness and tiredness.

Allergic-type Reactions: Maculopapular skin rash, pruritis, urticaria, redness and itching of the face and neck.

SYMPTOMS AND TREATMENT OF OVERDOSE:

No cases of overdose have been reported with IDARAC (floctafenine), therefore no specific information on

symptoms or treatment is available. Standard procedures to evacuate gastric contents, maintain urinary output and provide general supportive care should be employed.

DOSAGE AND ADMINISTRATION:

The usual adult dose of IDARAC (floctafenine) is 200 to 400 mg every 6 to 8 hours as required. The maximum recommended daily dose is 1200 mg. IDARAC is recommended for short-term management of acute pain. The tablets should be taken with a glass of water. IDARAC is not recommended for use in children.

AVAILABILITY:

IDARAC (floctafenine) tablets are available as round, biconvex, creamy white tablets containing 200 mg floctafenine with the markings "W" on one side and on the other side "I" with "200" below; and as round biconvex, creamy white tablets containing 400 mg floctafenine with the markings "W" on one side and on the other side "I" with "400" below. IDARAC is available in bottles of 100 and 500 tablets. Store at room temperature, protected from light. IDARAC is a Schedule F (prescription) drug. Product monograph available upon request.

References:

1. Bentley K, Camarda AJ, Melzack R, Morgan P, Roy C. Floctafenine, acetaminophen/codeine combinations, and placebo in dental pain. *Curr Ther Res.* 1991;49(2):147-154.
2. Lomas DM, Gay J, Midha RN, Postlethwaite DL. A double-blind comparative clinical trial of floctafenine and four other analgesics conducted in general practice. *J Intern Med Res.* 1976;4:179-182.
3. Data on file, Sanofi Winthrop (Dysmenorrhea Study).
4. Baird IM. A comparative blood loss study of floctafenine and aspirin in normal subjects. *Br J Clin Pharmacol.* 1976;3:936-938.
5. Data on file, Sanofi Winthrop (Adverse Events Report).

¹ Idarac (floctafenine) is a nonsteroidal anti-inflammatory drug indicated for short term use in acute pain of mild to moderate severity

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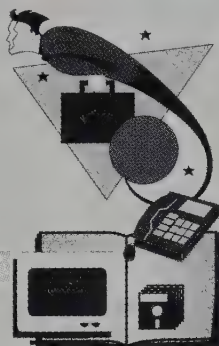
PAAB
PMAC

CDA LIBRARY

What's New In the CDA Library

This month, CDA's Package Library contains a series of articles on Electronic Dental Anesthesia. Most of the articles were located via a computer search on the MEDLINE database, a service that CDA members can obtain directly from the library.

Over the past year, library staffers received several requests for material on electronic dental anesthesia. To ensure that this information is made available to as many dentists as possible, a number of the available articles and studies were assembled into a package. This Package Library can be ordered by CDA members for \$5 plus applicable taxes. For a complete list of currently available Package Libraries, please call the library at: 1-800-267-6354, extension 223.



Here's a preview of some of the articles contained in this month's package:

- "Effect of electronic dental anesthesia on pain threshold and pain tolerance levels of human teeth subjected to stimulation with an electric pulp tester," by Gerschman, J.A. and Giebartowski, J. *Anesthesia Progress*. Mar.-Apr. 1991; pp. 45-9.

Abstract: The effect of electronic dental anesthesia on pain threshold and pain tolerance levels of human teeth subjected to stimulation with an electric pulp tester was evaluated...Electrostimulation significantly increased the pain stimulation threshold and pain tolerance level with both the square wave and postsynaptic wave.

- "Electronic dental anesthesia in a patient with suspected allergy to local anesthetics: report of a case," by Malamed, S.F. and Quinn, C.L. *JADA*. Jan. 1988; pp. 53-5.

Abstract: A 56-year-old patient with alleged allergy to local anesthetics required restorative dental treatment. Electronic dental anesthesia was used successfully, in lieu of injectable local anesthetics, to manage intraoperative pain associated

with the restoration of vital mandibular teeth.

- "Electronic dental anesthesia," by Crawford, P.R. *J Can Dent Assoc*. Jun. 1991; pp. 497-9.
- "Pain control: dentistry's everyday challenge," by Bonner, P. *Dentistry Today*. Jun.-Jul. 1992; pp. 70-3.
- "Electronic dental anesthesia. An anesthetic alternative," by Denbar, M.A. *Journal of the Greater Houston District Dental Society*. Mar. 1990; pp. 7-8.

New Books

- Yearbook of Dentistry 1992. Meskin, Lawrence, H. Editor-in-chief. Mosby Year Book. 1992.

This serial is divided into 18 chapters and aims to create an up-to-date reference for the practising dentist. Within each chapter, articles have been abstracted and commented on by the *Year Book of Dentistry's* editorial staff. For example, the chapter on oral biology provides information on the level of risk for the transmission of HIV between patients and dental staff. Similarly, the chapter on restorative dentistry addresses recent developments in amalgam. Fluorides, fluoridation and fluorosis issues are described in chapter 8.

- Dental Clinics of North America. "Topics in Oral Diagnosis II." Joseph A. D'Ambrosio and Peter G. Fotos, guest editors. January 1993; W.B. Saunders.

The latest instalment in this quarterly series is sponsored by the Teachers of Oral Diagnosis (OTOD) and "focuses on both established and contemporary principles of dental diagnostic sciences as they affect dental practice. Topics in oral diagnosis exemplify the diverse interests of the members of OTOD, and reflect the interrelationship of oral diagnosis with a variety of dental and medical specialties."

There are seven articles in this issue, including: "The basic principles of infectious diseases as related to dental practice"; "Diagnosis and management of taste disorders and burning mouth syndrome"; and "Oral manifestations of Human Immunodeficiency Virus infection."

New Video

The latest addition to the library's growing video collection is "Malpractice and You." Donated to the library by Canadian Dental Service Plans Inc. (CDSPI), it is available in both French and English.

The video, which was produced by CDSPI, addresses dental records, informed consent and the health history of the dental patient.

CDA members can borrow any of the library's books and videos for \$5 each plus applicable taxes. We're just a phone call away!



CDA Annual Dental Meeting • Toronto 1993

April 28 - May 1

ANNUAL DENTAL MEETING UPDATE

It's not too late to join us on site!



This year the 1993 CDA Annual Dental Meeting came quickly – it's only April and here we are! Time has literally flown for those of us organizing this event as we have been very busy nailing down all the details in a tight timeframe ... nonetheless, all is in order and the committee members and I are looking forward to seeing you in a few weeks!

If you did not pre-register for the meeting it is not too late to get in on the action – on-site computerized registration will be offered, however, please note that an on-site fee of \$27.00 is levied to all delegates who wait until then to register.

This year, we are bringing you the largest scientific program we have ever developed as well as the largest Dental Exhibit ever held in Canada! We will also have more activities in the Exhibit Hall than ever before – for your pleasure and discovery.



See you in Toronto, April 28 - May 1 for a "hair-raising experience at the CDA Annual Dental Meeting.

Thanks to many of our sponsors and supporters, we will also be offering you the opportunity to do some 'one stop shopping' and meet face-to-face with your dental dealers from across the continent. We are anticipating record numbers and hope you will take the time to feel the magic of sharing learning experiences and new discoveries with your professional colleagues and friends.

Looking forward to welcoming you to Toronto!

Michel Jahjah, DDS
General Chairman
CDA Conventions

The 1993 Organizing Committee is looking forward to welcoming you in Toronto!

Dr. Michel Jahjah	General Chairman
Dr. Dick Ito	Chairperson, Scientific
Dr. David Brown	Chairperson, Exhibits
Dr. Barry Chapnick	Representative, Toronto Academy of Dentistry
Dr. Warren Hing	Representative, West Toronto Dental Society
Dr. Rob Sutherland	Representative, East Toronto Dental Society
Dr. Eva Saxell	Representative, Toronto Central Dental Society
Dr. Phil Novack	Representative, North Toronto Dental Society
Dr. Ted Harper	Chairperson, Table Clinics
Dr. Rebecca Yacobi	Chairperson, Social Program
Mrs. Pat Miller Sampson	ODN & AA Representative
Mr. Jeffrey Miller	CDAA/ODN & AA Representative
Ms. Lorraine Boomhour	CDHA/ODHA Representative
Ms. Eva Young	DIAC Representative
Mr. Ken Croney	DIAC Representative
Mrs. Babs Harper	Spouses' & Childrens' Program
Ms. Debbie Fisher	Spouses' & Childrens' Program
Dr. Alan Vinegar	Fun Run
Ms. Janice Edgar	CDA Convention Coordinator
Ms. Diana Thorneycroft	ODA Meetings Coordinator
Ms. Beverly Davies	ODA Meetings Support
Dr. Elizabeth MacSween	ODA Liaison

CDA Annual Dental Meeting • Toronto 1993

April 28 - May 1

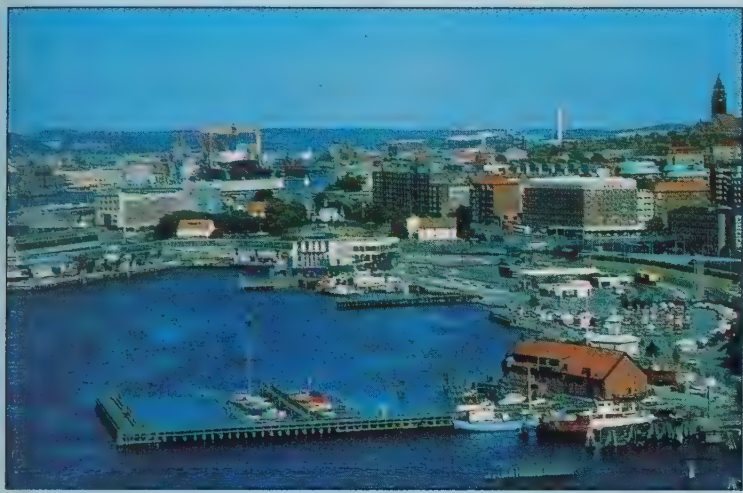
Here is an alphabetical listing of the clinicians who will be participating in the 1993 CDA Annual Dental Meeting being held at the Metro Toronto Convention Centre and L'Hôtel at the end of the month:

AKERVALL , Ms. Lorna (CDA)	Practice Management	LEINFELDER , Dr. Karl F. (DDS, MS)	Restorative Dentistry
BERMAN , Dr. Marvin (DDS)	Paediatric Dentistry	LEVALLIANT , Mr. Ted	Financial Planning
BIREK , Dr. Peter (DDS, MSc)	Periodontics	LEVY , Dr. Dana	Periodontics
BOGHOSIAN , Dr. Alan (DDS)	Dental Materials	LINDER , Ms. Annette A. (RDH, BS)	Hygiene Department Development
BUCHANAN , Dr. L. Stephen (DDS)	Anaesthesia	MALAMED , Dr. Stanley F. (DDS)	Anaesthesia
CASSELMAN , Ms. Barbie (BAA, FncFS)	Nutrition	MCCARTHY , Dr. Gillian (BDS, MSc)	Oral Medicine
CATON , Dr. Jack (DDS)	Periodontics	MILLER , Mr. Jeffrey	Receptionist Skills
CHRISTIANSON , Dr. M.L. Chris (DMD)	Stress	MILLER , Dr. Marilyn (DDS, FAGD)	New Technologies
CLARK , Dr. D. Christopher (DDS, MPH)	Fluorides	NASH , Dr. Ross W. (DDS)	Aesthetics
DALE , Dr. Jack G. (DDS)	Orthodontics	NEWBRUN , Dr. Ernest (DMD, PhD)	Preventive Dentistry
DALEY , Dr. Tom	Paediatric Dentistry	NIESSEN , Dr. Linda C. (DMD, MPH)	Geriatric Dentistry
DE VRIES , Mr. John	Technology in the Dental Office	NIFCO , Mr. Nathan	Computer Technology
DONOVAN , Dr. Terry (DDS)	Restorative Dentistry	OLSON , Mr. Thomas H. (BS, JD, LLM)	Financial Planning
ETTINGER , Dr. Ronald L. (DDS, MDS)	Geriatric Dentistry	PEER MILLER , Ms. Charlotte	Receptionist Skills
FISCHMAN , Dr. Stuart L. (DMD)	Oral Medicine	PHAROAH , Dr. Michael J.	Periodontics
FREEMAN , Dr. Eric	Periodontics	PRESS , Dr. Burton (DDS)	Practice Management
GALLANT , Mr. Cyril J. (CLU)	Financial Planning	ROBERTS , Dr. Eugene (DDS, PhD)	Orthodontics
GLASSMAN , Dr. Gary (DDS, FRCD(C))	Endodontics	SANDRIK , Dr. James L. (PhD)	Dental Materials
HAILEY , Mr. Walter Jr.	Practice Management	SCHAEFER , Dr. Milton E. (DDS, MLA)	Oral Pathology
HARRIS , Mr. Clyde A. (FLMI)	Financial Planning	SEROTA , Dr. Ken (DDS, MSc)	Endodontics
JEMT , Dr. Torsten (DDS, PhD)	Implants	SODEK , Dr. Jaroslav (BSc, PhD)	Periodontics
JOHNSTON , Dr. Douglas (DDS, MSc)	Paediatric Dentistry	SPATZNER , Dr. Mark (BSc, DMD, Dip. Perio)	Periodontics
JUDD , Dr. Peter (DDS, MSc)	Paediatric Dentistry	SYMINGTON , Dr. J.M. (MSc, PhD)	Periodontics
JUPP , Ms. Anita	Practice Management	TRUHE , Dr. Thomas F. (DDS)	New Technologies
KENNEDY , Dr. David B. (MSD, FRCD)	Ortho-Paedo	WATSON , Dr. P.A. (MScD)	Periodontics
KENNY , Dr. David (DDS, PhD)	Paediatric Dentistry	WILSON , Dr. Richard D. (DDS, FACD)	Periodontics
LAMANTIA , Ms. Joanne M. (BA)	Financial Planning	YACOBI , Dr. Rebecca (MSc, DDS)	Paediatric Dentistry
LAMARCHE , Docteur Claude (DMD)	Prosthodontics	YU , Dr. Donald C. (DMD, MScD)	Endodontics
LANG , Dr. Brien R. (DDS, MS)	Prosthodontics		
LAVIGNE , Dr. Gilles (DMD, MSc)	TMJ		
LAVIGNE , Ms. Salme (RDH, MS)	Implant Maintenance		



Göteborg • August 29 – September 2, 1993

Attend the 1993 FDI World Dental Congress in Göteborg, Sweden with CDA Conventions and Participate in the Official 1993 FDI Tour Program



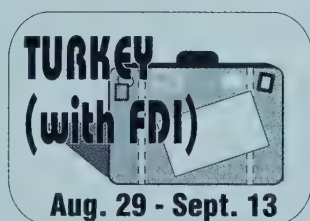
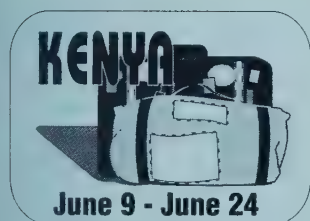
Göteborg – beautiful and charming harbour city in a breathtaking archipelago.

CDA Conventions is offering CDA Members a special package deal to the 1993 FDI World Dental Congress being held in Göteborg, Sweden. The itinerary combines a trip to the 81st World Dental Congress with a unique out-of-country seminar program in the fascinating country of Turkey.

Travellers will depart from Toronto on Sunday, August 29th and arrive in Göteborg on Monday, August 30th. Departure from Göteborg to begin your odyssey to Turkey will take place on Friday, September 3 via London, England. The itinerary includes stops in Istanbul, Ankara, Cappadocia, Pamukkale, Denizli, Khushadasi and Izmir. For more details on the 1993 FDI World Dental Congress and the travel itinerary contact CDA Conventions at 1-800-267-6354.

Travel The World With Us!

CDA Conventions' 1993 Out-of Country Seminar Program



This year CDA Conventions has organized four unique out-of-country seminar programs for its members. All members will soon receive a brochure with details of these programs. If you haven't received yours, call CDA Conventions toll free at 1-800-267-6354 or fax your request to (613) 523-3062.

If you like to learn while you travel (or travel while you learn), these programs are organized in cooperation with the dental associations of the destination countries. Don't miss them! Book now to ensure your choice of programs as space is limited.

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Offices & Practices

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General family practice with a preventative emphasis. Independently evaluated and appraised as being unsurpassed in quality. Located in brand new office building. Dental office occupies 2,000 sq. ft. on main floor with a 2,000 sq. ft. basement. Yearly gross approximates \$800,000. Could easily accommodate two hard-working dentists. Great support staff. Owner returning for postgraduate training. Please reply to CDA ACCESS Box 2526. (10/04)

BRITISH COLUMBIA - Central:

Small town, great outdoors. Well established, busy, computerized general practice for sale. Excellent staff, five operatories, lab, panorex. Solo practitioner grossing \$550,000 without hygienist. Selling for less than annual net. Retiring, but willing to stay on part-time to facilitate the transfer. Reply to CDA ACCESS Box 2549. (09/04)

BRITISH COLUMBIA- North

Delta: Very busy, ultra-modern computerized family practice for sale. Great location, fabulous staff, quality patients. Sale price is \$300,000. Serious purchasers only should contact Mr. Al Botteselle at (604) 736-6581 for more information. (03/05)

BRITISH COLUMBIA - Prince

George: General family practice with emphasis on crown and bridge and prevention. Office located in large modern dental clinic, gross \$500,000 per year working 12 days per month, 2,100 active charts. Computerized office with over 80% patients with insurance price \$200,000. Please call (604) 343-6760 or (604) 562-8470 or fax (604) 563-6228. (04/05)

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ALBERTA - Sherwood Park:

Recently established practice for sale in stripmall location, good growth potential. Please reply to CDA ACCESS Box 2560. (12/04)

ALBERTA - Edmonton:

Well established, two operator computerized practice. Excellent location, 4/5 lease, reasonable rate, death and disability clause, owner retiring, \$85,000. Call (403) 435-7908. (04/05)

SASKATCHEWAN:

Practice for sale in rural Saskatchewan. Excellent opportunity to purchase a well-established 12-year-old practice. General family practice with a preventative emphasis and high percentage of insurance patients. Two fully-equipped operatories with modern equipment. Town has a population of about 1,750 with a large draw area and is about an

hours drive from Saskatoon and Regina. Owner returning to school in June, priced low to sell. Please reply to CDA ACCESS Box 2561. (02/05)

SASKATCHEWAN:

Large family practice for sale in mid-size Saskatchewan city. Several operatories, three X-rays and panelipse, low overhead. Very reasonable, anxious due to health. Please reply to CDA ACCESS Box 2557. (12/04)

MANITOBA:

Very busy general practice in large town, rural Manitoba, modern office, good growth, ideal for two dentists. Owner returning for postgraduate training, willing to assist in transition. Please reply to CDA ACCESS Box 2566. (04/05)

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Growing country practice.

Located near two major towns, with excellent potential. Investment of only \$95,000 enables you to start practice immediately with a cash flow. Computerized.

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NOVA SCOTIA - Annapolis

Valley: Practice for sale in Nova Scotia Annapolis Valley. Very busy family practice, 1,200 sq. ft. office in a medical/dental professional centre. Ultramodern dental set-up, good gross, priced to sell. For more information call (902) 245-5666. (04/13)

NEWFOUNDLAND:

General family practice for sale. Hospital setting, serving 10,000. Easily supports two dentists, with a potential satellite clinic. Two state-of-the-art operatories, and a third with X-ray unit. Excellent lease arrangements, owner will assist in transition. Please reply to CDA ACCESS Box 2535. (02/04)

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BARBADOS-West Indies: Modern Dental Office for sale in Barbados. Present owner wants to retire for medical reasons. The office, located in Belleville (close to Bridgetown), is where most dentists and medical doctors have their offices. It is in a separate building and contains four treatment rooms with modern equipment, all necessary utility rooms, air conditioning and has good parking facilities. Telephone Dr. Stig Gefvert (809) 426-3065 or (809) 420-6559. (03/04)

Positions Available/Sought

ALBERTA - Calgary: Associateship available in modern 2,500 sq. ft. office. Present associate leaving after three years. Currently grossing \$300,000, busy location, general dentistry in residential area. Solo practice with associate. Buy-in potential for the right person. Phone (403) 281-4266 or (403) 256-4265. (02/04)

LOCUM LOCATORS

COLLECT (403) 791-7737.

(07/13)

ALBERTA: Periodontist - partner required in a well established busy downtown Edmonton periodontal practice. Currently booked four months in advance with a strong maintenance clientele. Please reply to CDA ACCESS Box 2567. (04/04)

SASKATCHEWAN - Regina: Seeking dental associate for modern office in large medical/dental facility. Good opportunity for the right person. For details call Dr. Ronald Katz, (306) 924-1494, or write to: 235B Albert Street N., Regina, Saskatchewan S4R 3C2. (08/04)

MANITOBA: Paid vacation to Hawaii for one week, for an associate willing to practice his or her skills

where they are needed most. This is for a very busy modern computerized practice in Thompson, Manitoba. Willing to stay for a minimum of one year. Excellent remuneration. Present associate returning to graduate school. Please contact Judy at (204) 677-4555. (11/13)

ONTARIO - London: Excellent location 15 km northeast of London. Five-year-old building. Thorndale Lions Medical Centre is looking for a dentist to start his own practice. Family physician also located in the same building. For more information contact: Anthony Siroen, R.R.#3, Ilderton, Ont. N0M 2A0 (519) 461-1198. (01/04)

ONTARIO: General dentist seeks short-term associateship (3-6 months) leading to partnership or buy-out in Toronto or outlying area. Please reply to CDA ACCESS Box 2564. (03/04)

ONTARIO - Windsor: Associate needed for growing, busy, general dental practice. Please call (519) 972-4868. (04/05)

ONTARIO - Windsor: Full time associate needed in a general family practice, experience and second

language is a great asset. Please reply to CDA ACCESS Box 2562. (04/05)

ONTARIO - Windsor: Oral and maxillofacial surgeon. Southwestern Ontario. Full practice opportunity. Implants, orthognathics, and out patient anesthesia experience required. Please reply to CDA ACCESS Box 2568. (04/04)

ONTARIO: Large southwestern center. Periodontist required full/part-time in busy periodontal practice available immediately, excellent terms with future option of partnership. Phone (519) 645-8716. (04/05)

ONTARIO - TORONTO

Part-time Periodontist or Endodontist is required for a busy progressive practice. Facilities provided. Please reply to CDA ACCESS Box 2569. (04/04)

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Unique opportunity for qualified Oral & Maxillofacial Surgeon. Well established practice, population drawing area of 200,000, exceptional hospital privileges at three hospitals, full-scope hospital and office practice. Location Thunder Bay, Ontario, Canada. Call (807) 344-3973, fax (807) 345-3395. (10/04)

CLINICAL DENTISTRY POSITION

The University of Alberta, Office of the Director of Clinics and Patient Care, invites applications for a yearly contract position to supervise and participate in the Admitting and Emergency Clinic of the Faculty of Dentistry. A supervising period of one to two, two week sessions may be required in a northern satellite student clinic. The contract is open to negotiation for renewal. The position is available to persons completing hospital residency programs, practicing dentists and/or those with academic teaching experience. This is a starting position only, the salary range being between \$45,000 to \$49,000.

Licensing for professional practice in Alberta is necessary as the successful applicant will be involved in patient screening and emergency treatment. Depending upon qualifications, other teaching assignments are possible and scheduling may allow registration in pursuit of a graduate program. Starting date is June 1, 1993. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. Applications, including a curriculum vitae and three letters of reference should be sent to:

Dr. J. Woronuk, Director, Clinics and Patient Care

Room 3096, Dentistry Pharmacy Centre

University of Alberta

Edmonton, Alberta, T6G 2N8

Before May 15, 1993. Telephone (403) 492-0576, Fax (403) 492-1624

The University of Alberta is committed to the principle of equity in employment. The University encourages applications from aboriginal persons, disabled persons, members of visible minorities and women.

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Orthodontic group practice established in 1972 is seeking one or more well qualified, personable, motivated, caring orthodontists with unquestionable integrity to join group practice. One of the founding partners is wanting to retire this year, and another within two years. Our present group consists of five orthodontists, all practicing edgewise mechanics. We have four offices within the metropolitan city area which are all fully staffed with computerized financial and appointment control. Three of the offices are equipped for multiple doctors to be working simultaneously.

Edmonton is a city of close to 750,000 friendly people and boasts numerous cultural, recreational and sporting activities, including its own symphony, live theatre, National Hockey League franchise, Canadian professional football team (where Warren Moon learned to play quarterback), and a Triple A professional baseball franchise. We are located close to good hunting and fishing, as well as world class skiing in Banff and Jasper.

If this sounds like where you would like to practise and raise a family, please talk to us. We are prepared to offer a generous guaranteed salary for the right individual along with an option to either associate for a longer period or an opportunity to buy into the group. If this sounds too good to be true, it's because it is. You owe it to yourself to contact us by writing:

Chairman, Empire Orthodontic Associates

#500 10080 Jasper Avenue

Edmonton, Alberta

T5J 1V9

or by phoning Tuesday-Friday 8:00 - 5:00 M.S.T. (403) 421-1511.

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This exciting career opportunity will appeal to Dentists interested in assuming the challenges of a Chief Executive Officer position. Through a staff of seven, the selected individual will be responsible for the overall operation and management of the Association, including: office administration, membership services, government relations, and communications.

Competitive candidates will be Dentists licenceable in the Province of Alberta, with at least 10 years experience. Excellent management, administration, interpersonal and communication skills are required.

Rewards include a competitive salary and benefits program, the opportunity to be an important resource to the President and Board of Directors, and to contribute extensively to the profession. To enquire further, please telephone or forward a resume of related accomplishments, in complete confidence, to:

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QUEBEC - Westmount: Exclusive prosthodontic office seeks an experienced dentist with a practice, to join its facility. This 2,700 sq. ft. office is fully equipped to easily accommodate 2-3 dentists, and houses a large dental lab. Availability can be tailored to your needs. Please call (514) 935-5212, between 10 a.m. - 3 p.m. (04/04)

YUKON - Whitehorse: Assistant required immediately in very busy six-operator, preventative practice in downtown Whitehorse. Excellent salary and benefits. D.O.E. Must be certified or at least five years experience. Ideal opportunity for active outdoor person interested in adventure and a prosperous challenging career. Serious applicants please call Dianna at (403) 668-6707 and fax resume to (403) 668-5121. (01/04)

YUKON - Whitehorse: Hygienist (permanent or locum) required immediately in busy six-operator practice in community of 23,000. Experience preferred, but new graduates welcome. Salary is \$30 to \$35 per hour doe. We will provide relocation assistance and aid in locating accommodation. Whitehorse is a modern city located in the unspoiled north. It is the fastest growing city in Canada with numerous opportunities to become involved in the arts, sports and the outdoors. Please fax resume to (403) 668-5121 and call (403) 668-6707. (08/04)

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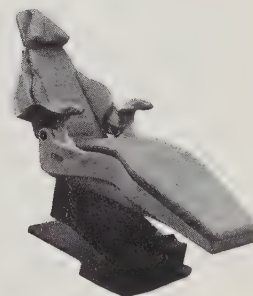
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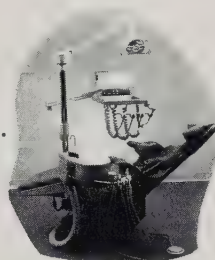
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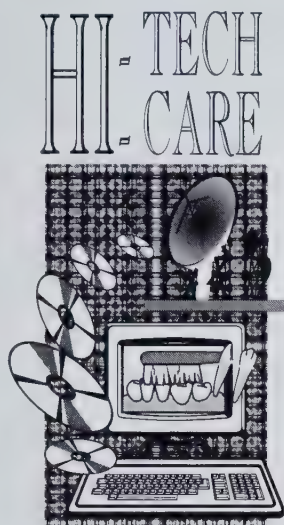
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New Vistas in Communication

Ken A. Neuman, DMD

When dental historians look back on the events that shaped the profession during the 20th century, the development of extraoral and intraoral imaging systems is sure to be described as one of the turning points in modern dentistry. And it should be. For these systems have fundamentally changed dental practice, and opened up new vistas in patient-dentist communications.

Extraoral and intraoral imaging systems have brought the missing link in dentist-patient communications – the visual picture – into dental offices across North America. They not only allow patients to see what needs to be done in their mouths, but also a simulation of what they will look like at the completion of treatment. The result is increased patient confidence and treatment acceptance.

Prior to the development of imaging systems, there were only four visual tools that dentists could use to communicate treatment needs and desired outcomes to their patients: photos; books; samples; and study models. Today, using either an extraoral or an intraoral imaging system, however, dentists can communicate this information instantly and clearly (Fig. 1). Patients can be shown areas of their mouths that they may never have seen before.

Before imaging systems came on the scene, many patients had diffi-



Fig. 1: Simulated before and after photo showing patient what is possible.

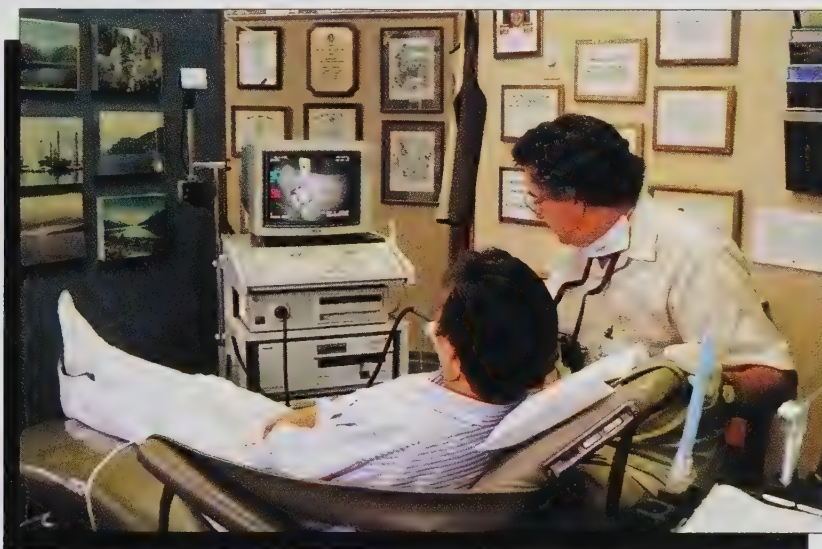


Fig. 2: Dentist and patient viewing inside of mouth projected onto monitor.

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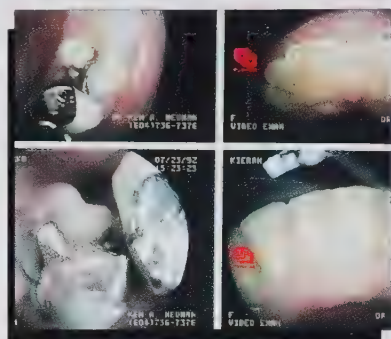


Fig. 3: Examination using intraoral system, clearly identifying work that needs to be done.



Fig. 4: Before and after photos of patient on completion of treatment.

culty visualizing what was wrong with their mouths and how the dentist proposed to treat the problem. Usually, the dentist would place a number 4 or 5 mirror along the buccal sulcus, give the patient a small hand mirror, and describe what the patient should see – providing he or she was able to position the hand mirror to catch the image reflected by the dentist's mirror. In many cases, the patient would nod and indicate that he or she could see the problem being described by the dentist – without seeing it at all. Concerned that he or she would appear stupid, the patient rarely admitted that the dentist's explanation was inadequate, and the dentist proceeded as if everything was 100 per cent clear.

Today, using an intraoral imaging system, dentists can take a camera the size of a handpiece, place it comfortably anywhere in the patient's mouth, and project clear, sharp images onto a television monitor. The dentist can display one molar or several molars – all as clear as if he or she had taken them out of the patient's mouth, enlarged them 30 times, and then handed them back to the patient (Fig. 2).

Advantages of Imaging Systems

1) *They are a terrific practice building tool.* Patients can see exactly what their treatment needs are (Fig. 3). From a diagnostic standpoint, it is obvious that both the dentist and the patient can see much more detail in a photograph that is enlarged 30-40 times than they can in a life-sized mirror image of the same picture. Dentists can assess patient needs with a higher degree of accuracy, and patients have a much higher level of trust in the final diagnosis. In addition, the dentist can produce photographic prints of the procedure, which can be used for his or her records, to facilitate insurance coverage, or just to give to the patient as a memento. The patient can carry the photograph around and show it to friends, allowing the "before and after" scenario to come into play. Regardless, the photographs often become conversation pieces and may lead to future referrals.

2) *They increase patient motivation.* Many patients are unsure of how they will actually look if they make a change in their appearance. The extraoral system allows before and after pictures to be presented to the patient at the discussion stage – before any treatment is done – which allows the patient to make a much more well-informed decision. Some patients may decide that they don't like their new "look," and refuse treatment, but isn't it better for them to realize this before any irreversible changes take place?

Intraoral cameras can be used to show patients what is going on in their mouths at various stages of their treatment. For example, once rubber dam is placed, the dentist can quickly take a photo showing the condition of the tooth (or teeth) that is about to be repaired. Once the work is complete, the dentist can take another photograph (Fig. 4), and then have the patient view the procedure from beginning to end. The dentist can show the initial fracture lines, open margins, etc., that required treatment, and then contrast these faults with the

beautiful restoration that he or she has done.

It's important for dentists to ensure that their patients appreciate not only the imaging technology itself, but also the ability it gives dentists to communicate more effectively with patients, and involve them more fully in treatment planning. Through this involvement, patients gain a much better appreciation of exactly what treatment was provided, and are therefore much more likely to want to take good care of it.

Dentists now have the ability to really show patients what dentistry can do for them. For many, it may be the first time that they have truly understood all the possibilities. But until now, dentists have had few effective ways of communicating this knowledge to patients.

Therefore, I encourage every dentist who has not already done so to examine the new extraoral and intraoral systems on the market. Get involved in a workshop. Take a class in this exciting area and then watch the enthusiasm that will spread throughout your patient base as patients see, for the first time, what you thought they had been seeing for years. ■

Dr. Ken A. Neuman is in general practice in Vancouver, B.C. He is recognized as a world authority on dental imaging systems.

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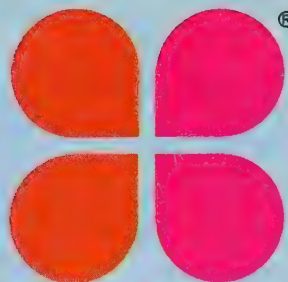
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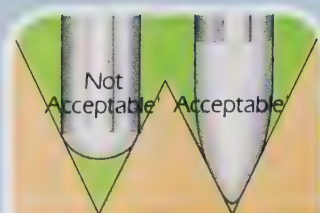
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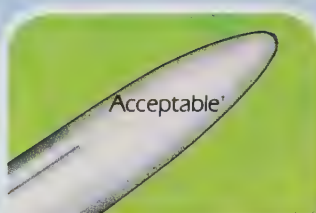
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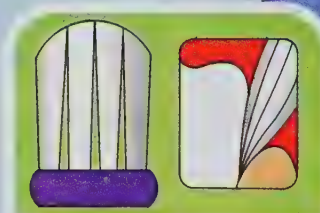
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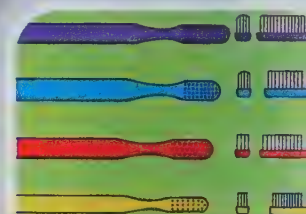
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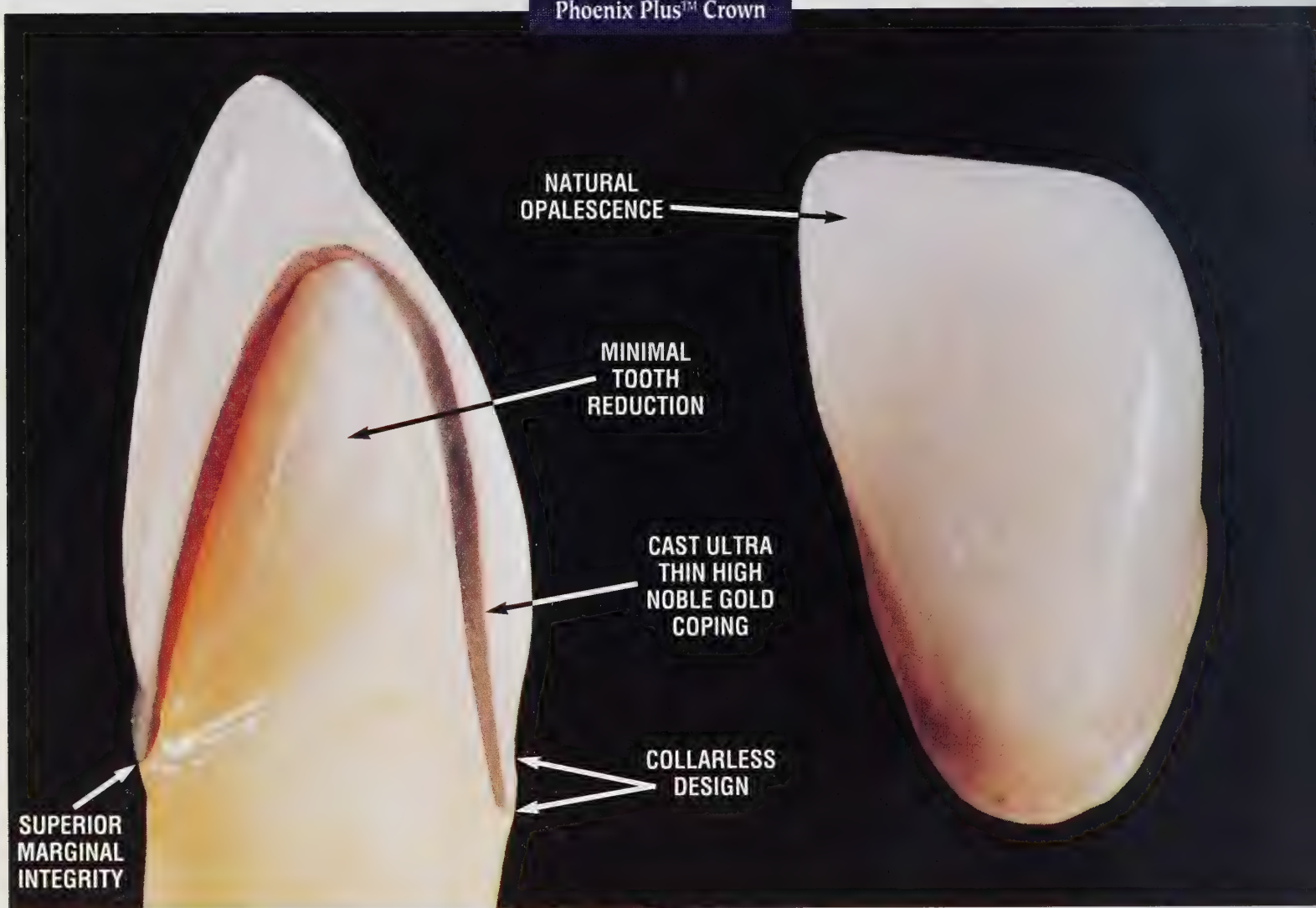


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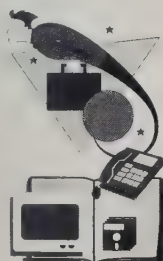
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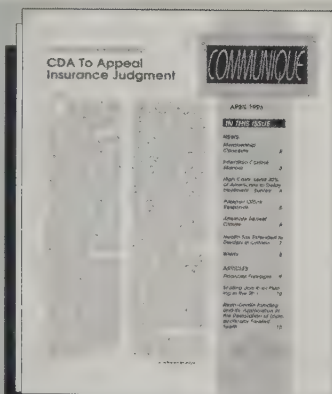
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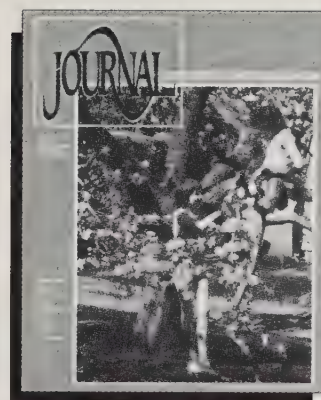
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July 1-3: British Dental Association Annual Conference being held at the Bournemouth Conference Centre, in Bournemouth, England. For details, contact: British Dental Association, conference office, 64 Wimpole St., London, England, W1M 8AL.

July 5-7: Bermuda Dental Association Annual Dental Convention being held in Paget, Bermuda. For more information, contact: Dr. Robert E. Gibbons, "Erin," Southcourt Ave, Paget PG 06, Bermuda. Tel: (809) 236-4477, or fax: (809) 236-8380.

July 4-7: 84th Annual Conference, Sustaining Our Communities: Health for the Future, is being held at the Radisson Plaza Hotel, St. John's, Newfoundland, by the Canadian Public Health Association. For more information, contact: Robert Burr, CPHA Director of Communications, 1565 Carling, Suite 400, Ottawa, Ontario, K1Z 8R1. Tel: (613) 725-3769.

August/Août 1993

August 22-27: 7th World Congress on Pain, sponsored by the International Association for the Study of Pain, is being held in Paris, France. For more information, contact: International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA, 98105. Tel: (206) 547-6409.

August 25-29: Canadian Academy of Endodontics 29th Annual Meeting being held at the Deerhurst Resort, in Huntsville, Ontario. For details, contact: Dr. W.B. Wiseman at (705) 737-4700.

September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact:

WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

September 21-23: Syrian Dental Association 4th Scientific Congress will be held in Damascus, Syria. For details, write: Dr. Rashid Jhara, President, Syrian Dental Association, Jisr Al Abiad, Str, Egypt No. 52 PO Box (11104), Damascus, Syria.

October/Octobre 1993

October 1-3: Canadian Association of Dental Consultants Annual Workshop will be held at the Sheraton Halifax in Halifax, Nova Scotia. For more information, contact: Dr. William O. Adams, PO Box 2200, Halifax, Nova Scotia, B3J 3C6. Tel: (902) 468-9700, ext. 194.

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

October 15-16: 1993 CFDE/CDA Teaching Conference on Hospital Dentistry being held at the University of Toronto, in Toronto. To register, contact: Ms. Gay MacQuarrie at (613) 523-1770 or write the CDA, 1815 Alta Vista Dr., Ottawa, Ontario, K1G 3Y6.

November/Novembre 1993

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, being held in San Francisco, CA. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

November 8-10: Israeli Dental Association International Dental Conference being held at the Tel-Aviv fair grounds in Tel-Aviv, Israel. For more information, write: Dr. I. Chen, IDA Chairman, Israeli Dental Association, 49 Bar-Kochba St., Israel, Tel-Aviv 63427.

February/Février 1994

February 16-20: Jamaica Dental Association 30th National Dental Convention is being held at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

June/juin 1994

June 25-July 1: 10th Congress of the International Association of Dento-Maxillo-Facial Radiology to be held in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMFR, c/o Korea Convention Services Ltd. SL Youngdong PO Box 305, Seoul 135-603, Korea.

Continuing Education/ 1993-1994

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June 11:

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June 20-25:

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For further information, contact:
Alumni Affairs and Continuing Education

Faculty of Dentistry
Dalhousie University
Halifax, Nova Scotia B3H 3J5
Tel: (902) 494-1674
Fax: (902) 494-2527

Post-Graduate Program in Esthetic Dentistry

October 1993 - April 1994, one week-end per month at Case Western Reserve University, Cleveland, Ohio. For information, contact: Dr. Dennis Tomasone, Department of Continuing Education, (216) 368-6761.

Post-Graduate Program in Esthetic Dentistry

October 1993 - April 1994, one week-end per month at Baylor School of Dentistry, Dallas, Texas. For information, contact: Ann Seals, Department of Continuing Education, (214) 828-8238.

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No. 5



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*Leinfelder, K.:
Clinical evaluation of Charisma -
A two year follow-up
The Kulzer Communicator, Spezial Update Issue,
Fall 1992

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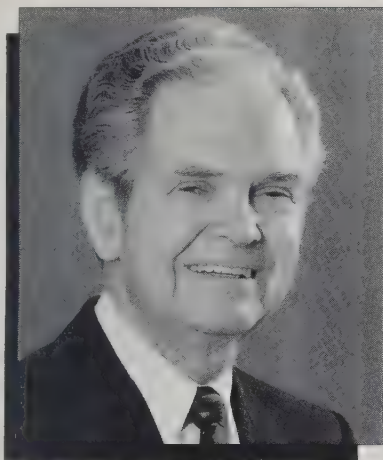
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EDITORIAL

WORLD NO-TOBACCO DAY



Dr. P. Ralph Crawford,
Editor

I can't recall exactly how old I was when I smoked my first cigarette, but I think it was a "Turret." Back then, Turrets were sold in packs of five at a nickel a pack – a penny a cigarette. By the time I was a teenager, I was smoking a pack a day. Ten years later, thoroughly hooked on tobacco, I mixed my habit between cigarettes, cigars and a pipe. I even chewed a little Copenhagen snuff. On two separate occasions, I fell asleep while smoking in bed. Only divine intervention saved me from destroying myself or, worse still, an entirely innocent bystander. Smoking never made people smarter, obviously!

And then I quit, cold turkey. Not because I'd learned my lesson, or had finally listened to the health warnings, but because I could no longer afford my habit. I was in college and I was married with a family. We needed the money to eat.

Being forced to quit smoking was one of the best things that ever happened to me, but it's given me a new perception on smokers. I now feel impatient toward the

smokers I encounter today. I look at them and ask myself, 'If I was able to break my insatiable habit and addiction, why can't they quit too.'

I am impatient with the smokers who work in CDA's smoke-free building. To pursue their habit, they must go outside – often standing under umbrellas or huddled in parkas – during their breaks. Not that these individuals are unique. I also become impatient, if not down-right angry, when I see hospital workers – even nurses and doctors – standing just outside the hospital entrance, smoking. Sometimes the group includes patients pushing IV stands.

Still, what upsets me the most is the number of young people, particularly young women, who have become hooked on cigarettes. In this day and age, when the statistics on cancer and smoking are frighteningly clear, its hard to comprehend why a nonsmoker, with their whole life ahead of them, would pick up the habit.

Fortunately, various individuals, groups and organizations are doing something about smoking. The World Health Organization (WHO), for one, has proclaimed Monday, May 31, as "World No-Tobacco Day." The theme of this year's campaign is: "Health services: our window to a tobacco-free world."

Think about it. When people look through the windows of hospitals and health centres, or into the offices of dentists, pharmacists and physicians, they should never see someone smoking. Indeed, it is our responsibility to do everything possible to eradicate smoking, an affliction that claims at least three million lives globally, and 35,000 lives in Canada, each and every year.

It is our responsibility to speak out when, as reported in a December 1992 *Globe and Mail* article, "multinational cigarette companies are scrambling to win the hearts and lungs of smokers in eastern Europe and the former Soviet

Union." Does commerce have no conscience? It is also our responsibility to speak out when major cultural events are funded by tobacco firms.

We should all praise and support the efforts of Health and Welfare Canada for its determined efforts to reduce smoking. The proposed amendments to Canada's tobacco regulations, which would require messages such as "smoking can kill you" and "cigarettes cause cancer" to be placed on tobacco packaging, are an improvement over the rather bland warning messages in use today. And Health and Welfare Canada, Ciba-Geigy Canada Ltd., and the Canadian Lung Association, should be highly congratulated for their recent Quit 4 Life program – a unique stop smoking program for teens.

Both the federal and provincial governments should be strongly supported on the issue of tobacco taxation. Sin taxes are a deterrent to smoking. Canada, a world leader in tobacco taxation, was found to have the lowest daily cigarette consumption in a 1991, 11-country survey. The fact that a billion dollar industry now exists to smuggle cheap cigarettes into Canada is unacceptable and unconscionable. It must be stopped.

CDA, as far back as 1964, passed a special resolution: "That the Canadian Dental Association go on record as actively supporting the objective of the Canada Smoking and Health Program of the Department of National Health and Welfare." Almost 30 years later, the association remains as strong, if not stronger, in its non-smoking advocacy.

Throughout the year, and especially on May 31 – World No-Tobacco Day – let us, as a profession, make a concerted effort to stamp out a crippler and a killer we really don't need.

P. Ralph Crawford, BA, DMD

Editor of the *Journal of the Canadian Dental Association*

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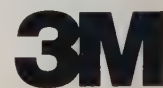
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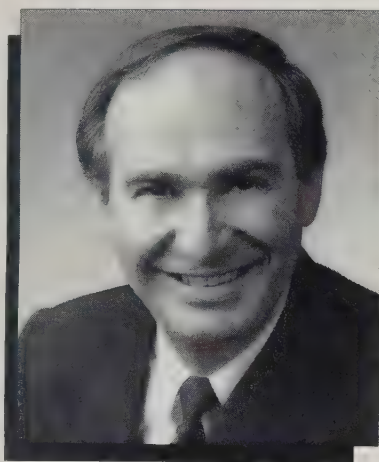
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Product information on page 432

PRESIDENT'S COLUMN

Membership Has Its Privileges



*Dr. Bernard Dolansky,
President*

Last February, in the midst of our usual Canadian winter doldrums, I received a letter from a nonmember dentist in Northern Ontario. The letter lit my CDA fires and certainly provided some mid-winter warmth.

The dentist wanted a copy of the President's Letter on fluorides that was sent to CDA members last October. In his letter, he stated that he had "contacted the CDA and was told in no uncertain terms that the required information would not be provided to him because he was not a member of the CDA."

He went on to say, "I am appalled and disgusted to think that my profession is withholding information which can be of benefit to the Canadian public in order to further its own interests. I understand that this information will be made public in March and it could be argued that little damage will be done in the meantime. However,

keeping this information secret in order to encourage membership in the association is a breach of fiduciary duty to the public."

In my answering letter to this dentist, I made it clear that CDA members pay for the services, benefits and information they receive from their national association. Allow me to share excerpts of this correspondence with you: "You state that you are a nonmember of CDA because you disagree with some of our policies, yet you also believe that you are entitled, by some right which I fail to understand, to all the benefits that flow from the contributions of those of us who give of their time and/or money to make sure those benefits exist. Do you also expect to benefit from such things as an orderly society, good roads, snow clearance, garbage collection, free public education, etc. while not supporting the governments that provide those services?"

"...I understand that you must pay your taxes, while you (and your fellow dentists in Quebec and Ontario) have a choice as to whether or not you join (CDA)...You must realize that these fluoride guidelines, like other examples, such as infection control guidelines or positions on mercury toxicity, don't just happen.

"When issues arise, a credible response to them requires the existence of a national professional association, as subjects such as these transcend provincial boundaries.

"The existence of an effective, dynamic and proactive association such as CDA is predicated on many factors...It doesn't just happen. In fact, what makes it happen is the most important ingredient of all:

members of the dental profession who support the whole concept because it is part of their professionalism...

"I am sure that many of our members have not always agreed with all of CDA's policies and positions. I know I haven't. But I believe that our professionalism is incomplete if we are not members of our professional association...

"The fact is that unless you and others like you assume your professional obligation to support the associations that enable you to be a professional, all of us will not be in a position to afford all the things that must be done to help dentists and our patients."

This dentist wanted CDA to provide him with information that he believed would benefit both him and his patients. CDA did not withhold this information from him, all we did was indicate that, as a nonmember, he would receive it in due course (articles on the appropriate use of fluorides were in fact published in the March and April issues of the *Journal*).

After inviting the dentist to join our national association, I stated that CDA's policy on nonmember access to information and services is clear: "Wherever it is possible and it does not pose a threat to the health of the public, only members of CDA will receive the benefits of membership."

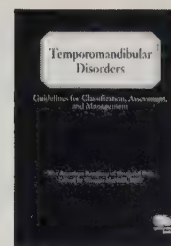
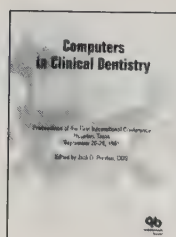
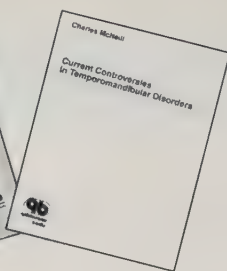
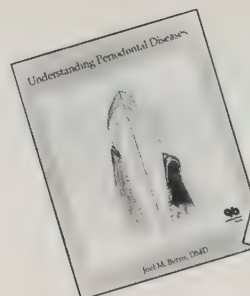
In other words, membership has its privileges.

*Bernard Dolansky, BA, DMD, MS
President of the Canadian Dental Association*

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New Quintessence Books



- ☐ **Wilson/Kornman/Newman (eds)**
Advances in Periodontics
Leading-edge resource on the current state of periodontology. Top-notch researchers and clinicians deliver information in an easy-to-access format.
384 pp/623 illus (416 color)/US \$120

- ☐ **McNeill (ed)**
Current Controversies in Temporomandibular Disorders
This proceedings volume discloses the various and, at times, conflicting views regarding TMD as presented at the Craniomandibular Institute's 10th Annual Squaw Valley Winter Seminar held in January 1991.
194 pp/50 illus/US \$58

- ☐ **Preston (ed)**
Computers in Clinical Dentistry: Proceedings of the First International Conference
For dentists interested in current, progressive computer applications, this volume serves as a well-rounded introduction to the benefits of computers in practice.
228 pp (softcover)/26 illus/US \$48

- ☐ **Trowbridge/Emling**
Inflammation: A Review of the Process, 4th edition
Updated version of this popular textbook. Includes a self-study program, simple illustrations, and quick review sections.
172 pp (softcover)/64 illus/US \$28

- ☐ **Stockdale**
Endodontic Surgery
Simplifies the subject. Recommends techniques to maximize long-term success while minimizing problems and failures.
122 pp/66 illus (28 color)/US \$48

- ☐ **Worthington/Brånemark (eds)**
Advanced Osseointegration Surgery
Provides surgical methods and techniques for more demanding clinical situations. Includes important information on newer and even experimental techniques. For the practicing surgeon with prior implant experience.
404 pp/668 illus (363 color)/US \$140

- ☐ **Hansson/Minor/Taylor**
Physical Therapy in Craniomandibular Disorders
Practical guide that reveals the many influencing factors of posture and muscle control on CMD.
80 pp/154 illus/US \$32

- ☐ **QDT 1993**
Features the "ITI Dental Implant System" by Neeser/Weber, "Lab Planning and Techniques for Osseointegrated Implant Treatment" by Coward/Watson, "Object Photography in Dental Technology" by Bengel, and more.
188 pp/522 illus (297 color)/US \$54

- ☐ **Aoshima**
A Collection of Ceramic Works
Visual guide that presents blueprints of characteristics intrinsic to each tooth. Provides a common language base for dentists, technicians, and patients.
92 pp/96 color illus/US \$60

- ☐ **Rule/Veatch (eds)**
Ethical Questions in Dentistry
Comprehensive range of ethical problems and suggested approaches to their resolution.
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- ☐ **Berns**
Understanding Periodontal Diseases
Formerly called *What is Periodontal Disease?*, this updated patient booklet reflects the changes in the new classification of diseases. Impress upon your patients the importance of regular dental checkups.
74 pp (softcover)/32 color illus/US \$26

- ☐ **Stean**
Aesthetic Dentistry With Indirect Resins
Presents techniques, case reports, and results using SR Isosit/Concept materials. Techniques also apply to other indirect resin systems.
95 pp/172 illus (138 color)/US \$68

- ☐ **Naylor**
Introduction to Metal Ceramic Technology
Introductory-level, skill-oriented technical information on fabricating this commonly used restoration. Includes information such as porcelain firing schedules and a list of equipment, instruments, and materials.
196 pp/456 illus (217 color)/US \$68

- ☐ **Schatz/Joho**
Minor Surgery in Orthodontics
Describes the most relevant pathological, surgical, and periodontal aspects of orthodontic treatment planning.
188 pp/315 illus/US \$98

- ☐ **AAOP/McNeill (ed)**
TMD: Guidelines for Classification, Assessment, and Management, 2nd edition
Updated version of the recommendations of the American Academy of Orofacial Pain (formerly the American Academy of Craniomandibular Disorders) for TMD.
144 pp/softcover/US \$18

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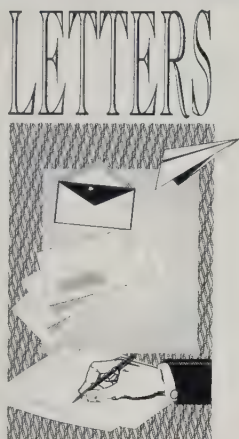
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LETTERS



Northern Dentistry

Over the years, we have come to accept the *CDA Journal* as a reliable, accurate source of information, with well-written articles and commentaries. It was therefore disappointing to read the articles entitled "Dental Care in Canada's North" (February 1993, Vol. 59, No.2). They contained inaccuracies and a lack of regard for the large resident dental community scattered throughout Northern Canada. The picture painted by the articles informed our southern colleagues of a dentally-neglected area with a poor supply of dentists.

The *Journal's* devotion to Northern dentistry did not seek any comments or suggestions from the 28 permanent full-time resident dentists of the Northwest Territories. These articles therefore lacked the advice and the experience of dentists who have lived and worked in the North for more than a decade.

At the present time, 39 members of our dental association and between 23 and 29 full-time dental therapists are scattered throughout our communities (to serve) a population of 57,649. There are nine private dental clinics in the North, with more opening every year. Quotes such as "it is unlikely that Northern dentistry will soon take on the shape seen in the typical Canadian private practice" are totally untrue. We have some of the most modern dental clinics in Canada.

Ten years ago, only two (Northern) communities had dental clinics,

Yellowknife and Hay River. Today, modern private dental facilities exist in Inuvik, Fort Smith, Norman Wells, Iqaluit and Rankin Inlet, providing the full range of dental procedures with visiting specialists. They also provide fixed prosthodontics in the Baffin and it is available for those who want it!!

Hassan M. Adam, B.D.S.
President, Northwest Territories Dental Association

Northern Dentistry

I'm up here – all the way up on that big, blank bit of the map with all the white stuff and the letters N.W.T. written on it.

I know it's easy to miss us. After all, you could comfortably seat every man woman and child living in the N.W.T. in the Toronto Skydome, and the few of us who are dentists can easily get lost in our 1.5-million square miles of country. But we are here – and doing a pretty good job of serving our people, even if I do say so myself.

And, do you know what? Some of us like it up here so much that we actually choose to live here – all the time. And, do you know what else? Some of our clinics are every bit as well equipped and provide every bit as high a standard of treatment as you can get in the south (dare I say, possibly even better than some places).

Yes, living and working in the North imposes certain different difficulties and constraints from those that pertain in the south. But we don't view ourselves as intrepid pioneers venturing into the wilderness to bring solace to the savages like the missionaries of old. Our normal is just different from your normal, and I wouldn't exchange it for the world.

So, please, at the very least, do us the credit of acknowledging our existence and please don't be so patronising about our patients. They're people, that's all, just like you.

W.J. Hill, B.D.S.
Fort Smith, N.W.T.

Northern Dentistry

In the February 1993 edition of the *Journal of the Canadian Dental Association*, you accurately describe Baffin Island's stark geography and the Inuit people, many of whom retain their traditional hunting and survival skills on the land.

You also describe the typical health centre staffed by skilled nurses and the functional dental clinic which is used by dental therapists and a dedicated, retired Ontario dentist and his dental assistant wife. This couple spend seven winter months in Igloolik and Pangnirtung, providing a desperately needed dental service. They are respected and trusted by the residents of these communities because of their commitment.

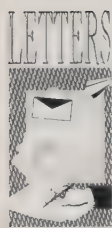
You omitted to mention in your report that for the past six years there has been a modern, well-equipped dental clinic in Iqaluit, the capital of the Baffin region. This clinic, owned by private dental practitioners in the Northwest Territories, is staffed by three dentists who give regular dental care to the residents of Iqaluit and also provide a visiting dental service to outlying communities, making 25 trips each year to nine Baffin communities. This clinic has recently added a specialty suite, complete with a panorex and cephalogram, where visiting specialists are able to provide much needed services.

Considerable progress has been made during the past six years to increase both the quantity and quality of dental services in the Baffin region. Yet a number of years will still have to pass before the dental providers in the Northwest Territories, despite their skill and patience, will overcome this current period of rampant decay. It is a depressing fact that as services have improved, regular combined cargo/passenger flights continue to bring into the smallest communities an ever increasing number of flats of sweetened, carbonated pop and packages of sugar-laden candy.

Baffin Island remains a beautiful

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ful, remote and challenging Island for health care workers and tourists.

Michael Lewis, DDS, DDPH

Director Dental Services, Department of Health, Government of the Northwest Territories

Patient Reading Material

I would like to suggest that our members do not place copies of the *Journal* in the reception area for patient reading. The CDA Access ads list practices for sale with gross annual earnings in the hundreds of thousands of dollars. I feel this is something many patients may misinterpret. Although we realize these gross earnings do not represent net income, our patients may not.

With many factors at work, including the current economic status and long standing negativism toward dentists' incomes, I think we need to do what we can to limit exposure of sensitive information of this type.

I believe the *Journal* articles are provided for the dental professional. If members want to make an article available for patient viewing, I suggest it is photocopied.

Lloyd J. Skuba, DDS

Edmonton, Alberta

Enigma of Amalgam

The feature article that ran in the February issue (Vol. 59, No. 2) of the *CDA Journal*, "The Enigma of Amalgam in Dentistry," by Dr. Derek Jones, was nothing short of brilliant. Dr. Jones created a definitive position paper on amalgam and set the standard for a literature review of amalgam use.

This work should be compulsory reading in all dental schools, for all dental personnel and for anyone (media or otherwise) who wishes to become familiar with the facts.

Congratulations to the author for his outstanding effort, and to the editor for featuring it.

J.K. Sutherland, DMD, MS

Director, Division of Fixed Prosthodontics, University of Saskatchewan

New Design

Bouquets for the new *CDA Journal* design. The whole format is very striking and I believe it will

help to encourage further utilization of the *Journal*.

The new format is a bold change and, of note, the *Communiqué* section should enhance membership awareness of CDA's vast range of services.

Well done, keep up the good work.

Terry D. Carlyle, DDS, M.Sc.

Calgary, Alberta.

Allergic Reaction To Spiramycin

I would like to comment on the article titled "Allergic Reaction to Spiramycin" (*J Canad Dent Assoc* 58:889-890, 1992) by Dr. E.K.Y. Chiu and others. The authors are to be commended for reporting the allergenicity of spiramycin. While the allergic potential of spiramycin is well documented, it is useful for the practitioner to be cognizant of the extent to which the allergic reaction can present.

Dr. Chiu goes on to state that spiramycin "has become the drug of choice in the treatment of dental infections." A review of the articles cited reveals that these somewhat dated references stop far short of recommending spiramycin as the drug of choice for dental infections.¹⁻³ Spiramycin has demonstrated the unique property to concentrate in the saliva and salivary glands.³ This would seem to favor spiramycin (and perhaps its more familiar macrolide relative, erythromycin) as an adjunctive modality in the treatment of periodontal disease. A review of microbial susceptibility reveals that, of the microbes commonly implicated in periodontal disease, penicillin and several other antibiotics show superior efficacy.⁴

The basic principles of antibiotic therapy in any infective process dictate that several factors be considered in the choice of antibiotics. Microbial sensitivity, toxicity of the drug and cost effectiveness are all important considerations. The efficacy, cost effectiveness, ease of administration and relative safety continue to render penicillin the first antibiotic of choice for dental infections and the majority of head and neck infections of odontogenic origin.^{5,6} Even after micro-

bial identification and antibiotic sensitivities are determined, the use of penicillin as a microbial specific, narrow-spectrum antibiotic is frequently indicated.

The article goes on to suggest that although spiramycin is primarily indicated for the adjunctive treatment of periodontal disease, its advantages are yet to be established. Current literature suggests that the nitroimidazole antibiotics (metronidazole and orindazole) are likely better choices.⁷ In summary, the opening statement indicating that spiramycin is the drug of choice for dental infections is clearly poorly founded.

The purpose of my letter is to target the general practitioner, at whom the *Journal* is primarily targeted, from misinterpreting this article. Once again, the intended purpose, that of making the practitioner aware of the allergenicity of spiramycin, is well taken. However, such a statement, positioned early in an article, could make "first impressions" detrimental to patient care.

Finally, the inclusion of such an apparently unfounded, umbrella statement in an otherwise well-written article causes concern as to the critical scrutiny of the *Journal's* editorial staff. The *Canadian Dental Association Journal* is the official organ of the Canadian Dental Association. In some cases it may be the only "scientific" publication that the practitioner receives and thus must maintain the highest standards of content.

Frank I. Hohn, DDS

Saskatoon, Saskatchewan

1. Lamy, L., Landry, R-G and Roy, S. La Spiramycin. *J Canad Dent Assoc* 55:393-395, 1989.

2. Harvey, R.F. Clinical impressions of a new antibiotic in periodontics. Spiramycin. *J Canad Dent Assoc* 27:576-585, 1961.

3. Rozanis, J., Johnson, R.H., Haq, M.S. et al. Spiramycin as a selective dental plaque control agent. *J Periodontal Res* 14:55-64, 1979.

4. Hammond, B.F. and Genco, R.J. Sensitivity of periodontal organisms to antibiotics and other antimicrobial agents. In: Genco, R.J. et al (eds), *Contemporary Periodontics*, Toronto, CV Mosby, 1990, pp 162-167.

5. Peterson, L.J. Principles of Antibiotic



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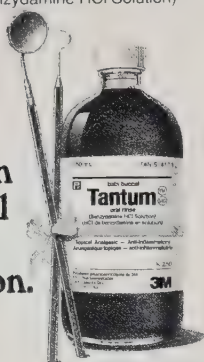
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inflammation.**



Summary of prescribing information

THERAPEUTIC CLASSIFICATION
Topical Analgesic — Anti-inflammatory
Action

Animal studies using the parenteral route have shown that "Tantum" Oral Rinse possesses properties of an analgesic—anti-inflammatory agent. This effect is not mediated through the pituitary-adrenal axis. Studies using the topical route have demonstrated the local anesthetic properties of benzydamine hydrochloride. In controlled studies in humans with oropharyngeal mucositis due to radiation therapy, "Tantum" Oral Rinse provides relief through reduction of pain and edema. Similar studies in patients with acute sore throat demonstrated relief from pain.

Indications

"Tantum" Oral Rinse is indicated for relief of pain in acute sore throat and for the symptomatic relief of oro-pharyngeal mucositis caused by radiation therapy.

Contraindications

"Tantum" Oral Rinse is contraindicated in subjects with a history of hypersensitivity to any of its components.

Precautions

The use of undiluted "Tantum" Oral Rinse may produce local irritation manifested by burning sensation in patients with mucosal defects. If necessary, it may be diluted (1:1) with lukewarm water. Since "Tantum" Oral Rinse is absorbed from the oral mucosa and excreted mostly unchanged in the urine, a possibility of its systemic action has to be considered in patients with renal impairment.

Use In Pregnancy

The safety of benzydamine HCl has not been established in pregnant patients. Risk to benefit ratio should be established if "Tantum" is to be used in these patients.

Use in Children

Safety and dose directions have not been established for children five years of age and younger.

Adverse Reactions

The most frequent adverse reactions reported are: local numbness (9.7%), local burning or stinging sensation (8.2%), nausea and/or vomiting (2.1%). The least frequent were reports of throat irritation, cough, dryness of the mouth associated with thirst, drowsiness and headache.

Treatment of Overdosage

There are no known cases of overdosage with benzydamine HCl gargle. Since no specific antidote for benzydamine is available, cases of excessive ingestion of the liquid should receive supportive symptomatic treatment aimed at rapid elimination of the drug.

Dosage and Administration

Acute sore throat: Gargle with 15 mL every 1 1/2 to 3 hours keeping in contact with the inflamed mucosa for at least 30 seconds. Expel from the mouth after use.

Radiation Mucositis: Use 15 mL as a gargle or rinse repeated 3-4 times a day, keeping in contact with the inflamed mucosa for at least 30 seconds and then expel from the mouth. Begin "Tantum" Oral Rinse the day prior to initial radiation therapy; continue daily during the treatment and after cessation of radiation until the desired improvement is obtained.

Availability

Tantum Oral Rinse is available in 100 and 250 mL bottles. "Tantum" Oral Rinse is a clear yellow-green liquid containing 0.15% benzydamine hydrochloride in a pleasant-tasting aqueous vehicle with 10% ethanol.

Product monograph is available on request.

References:

1. Simard-Savoie S and Forest D. *Curr Ther Res* 1978; 23(6):734-45.
2. Whiteside MW. *Curr Med Res Opin* 1982;8:188-9.
3. Wethington JF. *Clin Ther* 1985;7(5):641-6.
4. Product monograph
5. Yankell SL. Evaluation of benzydamine HCl in patients with aphthous ulcers. *The Compendium of Continuing Education* 1981; 11(1).
6. Epstein JB. *Int J Radiation Oncology Biol Phys* 1989; 16(6):1571-5.

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Therapy in Oral and Maxillofacial Infections. In: Topazian, R.G. and Goldberg, M.H. (eds), *Oral and Maxillofacial Surgery Clinics of North America*, Vol. 3, No. 2, Philadelphia, WB Saunders, 1991, pp 273-285.

6. Lang, N. Antiseptics and Antibiotics in Periodontics. In: Lindhe, J. (ed), *Textbook of Clinical Periodontology*, ed 2, Stockholm, Munks-gaard, 1989, pp 377-380.

CFDE Annual Report

The 1992 Canadian Fund for Dental Education (CFDE) Annual Report was distributed as a supplement to the *CDA Journal* in April. We hope you have had a chance to review the report and to share with us the accomplishments of the past 30 years. In every way, the successful history of CFDE is due to you, our donors. You can take pride in knowing that you have supported programs important to advancing dentistry through dental education and research.

You will also have noticed that our spring solicitation to dentists was included with the Annual Report. This approach was used to keep administrative costs as low as possible. That way, more money can be spent to support more programs. Requests for funding for programs such as a clinical research project to develop new approaches

in dental and periodontal chemotherapy, scholarships for academic excellence for dental technology students and assistance for an increasing number of dental students in financial difficulty are refused annually because of the lack of funds. We would like to be able to sponsor these and many other projects in the future — with your help.

If you have not already done so, please take a minute to complete the donor form in the Annual Report and send in your contribution today.

CFDE's board of trustees and staff would like to thank the editor, Dr. Ralph Crawford, and staff of the *CDA Journal* for the support and assistance they provide to the CFDE. For the past 30 years, the *Journal* has been instrumental in promoting and publicizing CFDE's fund-raising activities, programs and news in its monthly publication. Throughout that time the *Journal* has served as an important link to the dental profession. We appreciate their cooperation and shared interest in serving dental education and research in Canada, and look forward to a future of continued involvement.

Dr. Gordon Thompson
CFDE Chairman

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	March 26, 1993	February 26, 1993	
Bond & Mortgage Fund	103.99854	103.68972	14.0%
Common Stock Fund	19.70999	18.67545	12.9%
Money Market Fund	63.74508	63.42610	6.4%
Balanced Fund	38.25277	37.57778	10.5%

G.I.C. Fund

Term	March 26, 1993	February 26, 1993
1 yr	5.85%	6.15%
2 yr	6.35%	6.60%
3 yr	6.60%	7.00%
4 yr	7.10%	7.35%
5 yr	7.35%	7.60%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

	March 26, 1993	February 26, 1993
For further information:	\$176,663,365.00	\$173,572,603.58



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100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

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Metro Toronto Service in English
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Extensions: 252, 253, 254
Fax.

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NEWS UPDATE

CDA Past-President Dead



Dr. Donald Williams,
CDA president, 1981-1982

Dr. Donald Williams, a CDA past-president, passed away recently in Moncton, New Brunswick. He was 61.

Born in St. John, New Brunswick, Dr. Williams graduated from the faculty of dentistry at Dalhousie University in 1955. He extended a helping hand and willing heart wherever he went, and enjoyed a long and distinguished career of service to his profession and community.

Dr. Williams served with the Royal Canadian Dental Corps from 1955 to 1958. Following his military service, he maintained a general practice in Moncton, retiring a short time ago. Throughout his dental career, he worked tirelessly with his local, provincial and national dental associations, holding numerous executive offices and serving as president at all three levels. Representing his home province of New Brunswick, Dr. Williams was first elected to the CDA board of governors in 1976 and to CDA's executive council in 1978.

When he became CDA's present-elect in 1980, Dr. Williams said: "I have to divorce myself from being a Maritimer and think of the needs of dentists right across the country. The biggest challenge for me is to adopt a national feeling, to

be sensitive to what dentists are saying regardless of geography. Mine is a listening role."

It was this sensitivity to dentists' needs, combined with an ability to listen and react, that brought him recognition during his term as CDA president (1981-82).

Dr. Williams was a member of the Academy of General Dentistry as well as the Pierre Fauchard Society, and a fellow of the American College of Dentists, the Academy of Dentistry International and the International College of Dentists. His alma mater, Dalhousie University, awarded him an honorary doctorate of law in 1982 and its Distinguished Alumni Award in 1991.

From the time he established his dental practice in Moncton, Dr. Williams was active in numerous community endeavors such as the Boy Scouts, Salvation Army, United Way, Anglican Church, YMCA and the VON.

Dr. Williams is survived by his wife Thurza (Tess), daughters Catherine (St. John, New Brunswick) and Natalie (Quispamsis, New Brunswick) and son Peter (Toronto). ■

CDA Mourns Loss of Olive Utas

CDA is mourning the loss of one of dentistry's first ladies.

Olive Utas, the wife of former CDA president Dr. Gilbert (Gil) E. Utas, died March 31 in Grande Prairie, Alberta.

Dr. Bernard Dolansky, CDA's president, has extended CDA's sincere condolences and sympathy to Dr. Utas. In lieu of flowers, the family has requested that donations be made to a cancer fund or centre.

Olive and Gil Utas had been married for 44 years. The couple moved to Grande Prairie when Dr. Utas established his dental practice there in 1964. Mrs. Utas's gracious smile and friendly hospitality were very familiar to many members of the dental community as she ac-

companied her husband to numerous meetings in Canada and abroad throughout the years. She will be missed. ■

Eatons Amends Misleading Ad

Concerns expressed by the Ontario Dental Association (ODA) over the wording of an Eatons' advertisement that ran in the *Toronto Star* April 6 have resulted in the company changing the ad's message.

The offending ad, which was aimed at increasing Eatons' sales of the Braun Plaque Remover, asked consumers, in large bold type: "Isn't it time you stopped paying for your dentist's trips to Florida?"

ODA quickly contacted both Braun and Oral B about the ad, and were informed that it had been created independently by Eatons's advertising department. Eatons was immediately contacted by both CDA and ODA. The company's president, Mr. George Eaton, subsequently extended Eatons' sincere apologies to both CDA and ODA, and assured both groups that the offensive caption would be immediately changed.

In the April 8 issue of the *Toronto Star*, the Eatons' Braun Plaque Remover ad, as promised, ran with a much more positive dental health message: "A great way to make both you and your dentist smile at your next check up!" ■

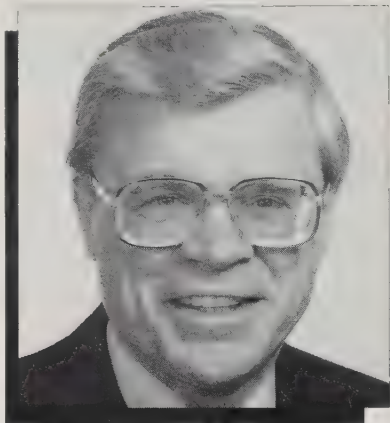
Dr. Dennis Smith Receives Ontario Trillium Award

Dr. Dennis Smith, the head of the biomaterials department at the University of Toronto, has once again been recognized for his outstanding achievements in biomaterials research.

At a special ceremony in Toronto April 5, Ontario Health Minister Ruth Grier presented Dr. Smith with the Trillium Clinical Scientist Award for 1992/1993.

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Dr. Dennis Smith

The Trillium Award was established to honor distinguished clinical scientists, working in Ontario, who have achieved an international reputation for their research excellence and their contributions to health care. The award is intended to promote clinical research and encourage clinical scientists to continue working in Ontario.

A research grant of \$265,000 is awarded to each winner's university for clinical research, and the winner receives a specially-designed sculpture.

The award commendation made particular reference to Dr. Smith's role in the development of dental cements, as well as the acrylic cement that is now used in most of the 500,000 hip replacements performed in the world each year.

Dr. Smith's research activities were the focus of a September 1990 *Journal* feature article, "Cementing The Future," which explained how his work in acrylic cement ended up benefitting Dr. Smith in an even more tangible way – Dr. Smith recently underwent a double hip replacement. ■

Forensic Dentist's Evidence Aids Conviction

A Montreal dentist recently presented forensic evidence that contributed to a guilty conviction during a Fredericton, New Brunswick, murder trial.

Dr. Robert Dorion gave the evi-

dence during the trial of a 19-year-old male charged with the 1991 murder of a 14-year-old girl in Oro-mocto, New Brunswick, east of Fredericton.

One of only four people in Canada certified in forensic odontology, Dr. Dorion was asked to answer three specific questions: Was the bite mark found on the girl's body of human origin; how forcefully was it inflicted; and when was it inflicted relative to the time of death.



Dr. Robert Dorion

Dr. Dorion demonstrated to the jury how 14 specific points of the accused's dentition lined up with the bite marks on the victim's abdomen. The fact that there was no hemorrhaging beneath any of the teeth marks convinced Dr. Dorion that the bite was inflicted at either at the time of death or after it had occurred.

Dr. Dorion's expert testimony on the force used to inflict the bite marks set a legal precedent in Canada. It was the first time that evidence was accepted relative to the amount of force used to inflict bite marks and its effect on tissue. ■

Research Bodies Hold Historic Meeting

History was made March 10-14 in Chicago when the Canadian Association for Dental Research (CADR) was designated as co-host of the International Association for Dental Research and the American Association for Dental Research's continental meeting.



The Cheseborough Pond "Close-up" research award is presented to Dr. J. Li of the University of Toronto.



Dr. Laura Tam received the Proctor and Gamble "Crest" award for dental research.

The co-hosting concept will now become the standard format for all future continental meetings of the Canadian, American and International research organizations.

Appropriately, the theme of the 1993 meeting was shaping the future together. A record number of scientific presentations were offered at the meeting, including 166 that originated in Canada.

During CADR's business luncheon, two prestigious awards were made to Canadian researchers. Dr. J. Li of the University of Toronto (supervised by Dr. Jaro Sodek) was named as the winner of the Cheseborough Pond (Canada) "Close-Up" Award for his doctoral paper on "Cloning and characterization of the rat bone sialoprotein (BSP) gene promoter." Dr. Li received a

plaque and \$1,500 U.S.

Dr. Laura Tam, also from the University of Toronto (supervised by Dr. Robert Pilliar), received the "Crest" award, sponsored by Proctor and Gamble Inc. Her post doctoral paper was titled "Fracture toughness of dentin-composite resin adhesive interfaces." She received \$500 U.S. and a plaque of recognition. Both Drs. Li and Tam also received travel funds from Unilever Research.

CADR held its 17th annual meeting during the continental meeting. Its 1994 annual meeting will be held in Seattle, Washington, from March 9-13, while Minneapolis has been selected as the site for the 1995 meeting. ■

WHO Fellowships Offered

On behalf of Health and Welfare Canada, the Canadian Society for International Health has announced details of the annual World Health Organization (WHO) fellowship competition.

Some 10 to 15 fellowships, up to a maximum of \$5,000 each, will be awarded to eligible Canadian citizens wishing to undertake short-term studies abroad.

Health personnel eligible to apply for fellowships include individuals who have finished their formal professional training, have several years of experience, and wish to continue their professional development in a health-related field relevant to their work.

Applicants will be rated by a Canadian selection committee on the basis of their education, experience, proposed area of study, field of activity and the intended use of their newly acquired knowledge. Applications must be received before June 30, 1993.

Additional information and application forms can be obtained by contacting: WHO/PAHO fellowships, Canadian Society for International Health, 170 Laurier Avenue West, Suite 902, Ottawa, Ontario K1P 5V5; telephone (613) 230-2654; fax (613) 230-8401. ■



Saskatchewan Dental College Future in Doubt

The University of Saskatchewan College of Dentistry may become a victim of budget constraints if a University Program Review Panel (UPRP) recommendation is accepted.

In its March 4 report, the panel recommended that the Saskatchewan government and the university negotiate with other provinces with a view toward "buying space" for dental students. If those negotiations proved successful, the panel further recommended that Saskatchewan's college of dentistry be phased out.

Spokespersons from the college say the UPRP recommendation was poorly substantiated. The panel relied heavily on a 1991 university report that included a similar recommendation.

The college was created 25 years ago, when the province determined that the system of "buying spaces" for dental students in other provinces did not work. In fact, based on past performance, buying space may cost more than operating the existing dental school.

If the college is closed, hundreds of thousands of dollars in annual funding for external research, international projects, and subsidized dental treatment would be forfeited. Fifty-eight full- and 85 part-time jobs would also disappear, and an immediate expenditure of millions of dollars would be required for severance pay.

Forty-two per cent of the dental specialists in Saskatchewan are associated with the college. If the college were closed, many Saskatchewan residents would have to travel elsewhere for treatment.

In its report, the review panel stated that Saskatchewan graduates the lowest number of dental students per year at the second highest cost per student of the four western provinces. Faculty members do not agree with this statement. They say Saskatchewan graduates dentists at one of the lowest costs per student in North America, with 62 per cent of the graduates staying in the province following graduation.

DID YOU KNOW?

Did you know that an innovative entrepreneur in the United States is selling dental instruments in personal sets that patients can take to their dentist? An advertisement in the *New York Times* asks: Are you staying away from dental checkups because of the fear of viral cross-contamination? Now, own your own set of dental instruments – and be sure they'll never be used on anyone else!

The infection-protection kit, which sells for \$49, consists of "a dental mirror, explorer, cotton pliers, excavator (decay), amalgam plugger, amalgam carver, scaler, and perio instrument, as well as six disposable trays, six sterilized bags, dental floss, and two drill angles for cleaning – with rubber cups." No mention is made of how a cavity preparation is accomplished before the "personal" amalgam plugger and carver are used.

Patients are advised to bring their personal dental kit to the dentist and when the appointment is complete to take them home and immerse them in boiling water for 20 minutes – making them ready for the next appointment.

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College of dentistry supporters also say that the UPRP incorrectly concluded that the demand for dentists in Saskatchewan was low. They point to studies showing that there will be a significant increase in the need for most dental services in Saskatchewan well past the year 2000, and say that this need will be for more sophisticated forms of treatment that only dentists can provide.

The college spokespeople readily admit fiscal restraint is a fact of life today, but say that program cuts must not be made indiscriminately. They feel the panel failed to consider all the relevant facts, and that a comprehensive analysis would show that the college should continue to fulfil its mandate into the 21st century.

University president Dr. George Ivany strongly supports the continued presence of the college, and said that a new dental class will be admitted in September 1993.

Established in 1992 by the Saskatchewan government, the review panel's mandate was to assess all provincial university programs in terms of identifying duplication, accessibility, funding, restraint, goals and accountability. ■

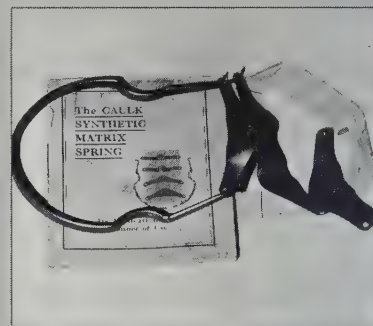
WHAT'S IT?

February's "What's It?," which asked readers to identify a spring-like apparatus, was not easy to solve because we didn't have the complete puzzle.

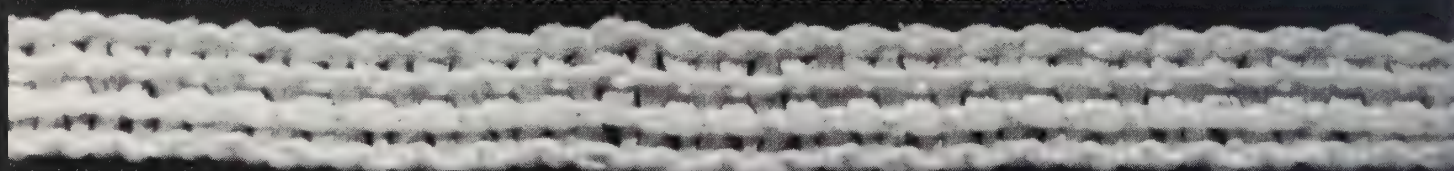
The metal device was part of an old Caulk Synthetic Matrix Spring for the placement of silicate fillings. Caulk's instructions stated that "the adjustment is

made easily and quickly. The tension of the spring is sufficient to hold the matrix and celluloid strip firmly in place."

To the readers who wrote in suggesting the device was for orthodontics or surgical retraction, Thanks, but no prize. ■



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BOOK REVIEWS

Clinical Endodontics

By Leif Tronstad

1991, Thieme Medical Publishers, Inc. New York
238 pages, 533 illustrations,
\$32.36 (Cdn)

This book is small, but it is packed with concise data. While the book appears to be meant primarily for the dental student, it would also be useful as a refresher for the practising dentist. The reader should not be misled by the title, however, and assume that Tronstad's text is primarily a clinical manual.

In the first three chapters of the book, which review the structure of dentin and pulp, apical periodontium and the symptomatology of dental pain, it is clear that the author has in no way assumed that readers will be well versed in the basic sciences. Chapter 4 is more advanced, and describes endodontic examination and diagnosis with a brevity and economy of terms that is admirable.

The author seems to believe that, because it is difficult to match a histologic diagnosis with clinical symptoms, a simple and practical clinical diagnostic system that uses only clinical terms should be employed. Despite this simplicity in diagnosis, the chapters on the treatment of vital pulps and non-vital teeth are liberally illustrated and reinforced with histologic evidence of the rationale for treatment. Treatment aspects of root resorption, which is often an unknown factor to the general practitioner, are explained on a histologic and clinical basis in a short, 11-page, chapter. The inclusion of basic sciences into the clinical field should be considered a strength of this text.

Texts dealing with clinical endodontics should have chapters that specifically emphasize instrumentation and obturation of root canals. Although this text's chapters on instruments, materials and filling techniques are brief, they cover a fairly complete and broad spectrum. The author does have a

preference for the apical box preparation and the standardized filling technique, but recognizes that not all types of curved or narrow roots lend themselves to this preparation.

One weakness of the text, which may relate to its small size, is the chapter on dental morphology. The brief line drawings of pulp and canals will not help the practitioner to make access on a complex canal system, which is often the secret to a successful treatment. In addition, there are no references listed at the end of each chapter. Possibly the short alphabetic list of further reading at the end of the text is intended to be used as a reference list.

In brief, this is a well written book that would be of interest to the general practitioner who is looking for something other than the controversies or innovative techniques found in the more comprehensive texts in endodontics.

Reviewed by:

William H. Christie, DMD, MS,
FRCD(C)

Associate professor (endodontology), department of restorative dentistry, faculty of dentistry, University of Manitoba

Natural Ceramics

By David Korson

1990, Quintessence Publishing Co. Ltd., Chicago
127 pages, color illustrations

David Korson is an acknowledged pioneer in the application of color to produce natural-looking ceramic restorations. In this book, he lays out a porcelain building technique that allows ceramists to visualize, place and control various effects such as dentin mamelons, translucent areas and white hyperplasia as they occur in natural dentition.

The author's philosophy and technique is based on his insightful

analysis of the color structure of teeth (i.e. dentin and enamel are the foundation for natural tooth color). He also shows clearly how, in nature, dentin color is transmitted through the overlying enamel and how enamel thickness and patient age influence perceived color.

Korson combines his findings in these areas with a thorough understanding of tooth morphology to reproduce the character and individuality of each tooth. As a valuable sidelight, he lays out an effective rationale and strategy for handling the patient who wants straight, white restorations – the "Hollywood smile" – by demonstrating how natural-looking results are possible only through the use of proper lighting, shade selection, custom shade guides and final corrections. His clear step-by-step procedures show how to overcome common problems, notably duplicating the use of color opaque intensifiers and masking unsightly gingival porcelains without surface staining. He balances these esthetic techniques with solid advice on enhancing the biological acceptability of the restoration. Korson outlines the crown design factors and margin designs in common use today and the importance of basic tooth shapes.

This richly-illustrated volume has something in it for everyone. Dentists will find invaluable tips on shade selection, communication, lighting and tooth character. For both the beginner and the advanced ceramist, the vast number of color photographs clearly illustrate Korson's philosophy and technique. The comprehensive chapter devoted to tooth anatomy (detailing such important criteria as tooth contact areas, heights of anatomical contour and tissue patterns) will be a valuable reference source to all dental professionals.

Reviewed by:

H.J. (Hyo) Maier, RDT
President, Aurum Ceramic/Classic Dental Laboratories Ltd.

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Replication of Anterior Teeth in the Four Seasons of Life

By David Korson

1990, Quintessence Publishing
Co., Ltd., Chicago
127 pages, color illustrations

The author has symbolically classified the specific, age-related changes we see in anterior teeth into the "four seasons of life:" spring, summer, autumn, and winter. He then employs this analogy to show the reader how to create full-coverage ceramic crowns that include these characterizations. Employing an atlas format that includes 260 color illustrations, this book guides the reader, in an easy step-by-step fashion, through the technical procedures involved in fabricating one example tooth for each season, including the preparation of the framework and custom staining.

We are all aware that mastication causes abrasion of natural teeth, the difficulty lies in communicating the specific effects of mastication between dentist and technician. David Korson's easily interpreted classification of individual age categories eliminates misunderstandings and makes the description of age and wear-related change possible – without complicated explanations. Even intermediate changes are easily described with this theme.

Korson's philosophy is based on his concept that base tooth shade is not nearly as important as anatomic form, surface detail and shade characterizations in achieving a natural effect in a prosthesis. He demonstrates how specific compositions of individually-mixed materials can be used to elicit specific effects. Both dentists and technicians alike will find the description of techniques for placing special lifelike characterizations, the effective use of modifiers and stains, and the custom detailing of surface design particularly valuable.

Reviewed by:

H.J. (Hyo) Maier, RDT
President, Aurum Ceramic/Classic
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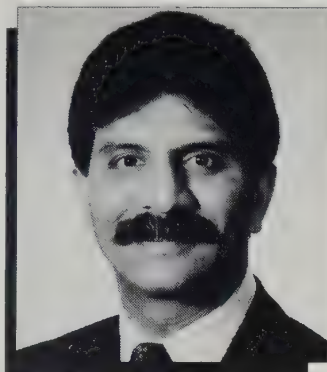
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Fear Not: Practice Buy Ins

Imtiaz Manji, B.Sc.,
President of ExperDent

So you're ready to take the plunge, either by becoming an associate or by bringing one on board. Either way, you're bound to have some serious reservations. If you're a potential associate, you've probably heard your share of horror stories from colleagues who have been exploited by senior dentists. But those horror stories cut both ways. If you're an established practitioner, you probably know of many associates who have pulled the proverbial rug right out from under a senior dentist's feet.

The good news is this: a cleverly-balanced buy in agreement between the associate and senior dentist can put both parties' fears to rest. Although the nature of the buy in beast makes it impossible to eliminate all the risk, it's possible to make the risk a more equitable one, with notable potential for a win-win scenario.

Mapping it Out

If there is a single factor that contributes to failed relationships between associates and dentists, it is the *laissez-faire* attitude that both parties often take at the start. They decide, to their eventual detriment, to join forces without finalizing any of the details of their long-term relationship. The only factor that they may have agreed on is that some potential for a buy in exists, but the timing and formula for the buy in remain nebulous. This only paves the way for trouble.

Let's assume that you're a senior dentist and the associate you're bringing aboard is a new graduate with no patient base. It's unusual for a new graduate to become an

equity associate immediately. But many new grads would like to know if, after two or three years of practise, they will have the opportunity to buy in.

Logic dictates that associates are more inclined to work hard in practices where the potential to buy in exists and is clearly defined. However, some associates and senior dentists still choose to adopt a *laissez-faire* attitude on buy ins, generally because they don't want to dive into buy in discussions without ever having worked together. Their many concerns – will we like each other?, will we share the same practice philosophies?, for example – are legitimate. But adopting a wait and see attitude is foolhardy unless a detailed buy in discussion takes place first. The preliminary buy in discussion allows the dentist and associate to enjoy all the advantages of the wait and see approach, while minimizing the potential hazards.

How it Works

The difference between the wait and see approach and the proactive approach is clear. From the very start of the proactive relationship, the formula and timing for a potential buy in are discussed. Although there are no firm commitments from either party, there is a tacit agreement to put the buy in question on the table at a later date, usually after the associate and the senior dentist have worked together for two years. At that juncture, the two parties have a substantive discussion, which includes establishing precise figures for the buy in.

The two year mark is a critical

juncture in a senior dentist/associate relationship. By then, both parties should know if they are professionally and personally compatible. The associate knows whether the senior dentist is committed to directing patients his or her way, and the senior dentist has had the opportunity to determine if patients like the new associate.

In addition, after two years the associate will have started to become established, and the senior dentist can begin to envision the associate's potential as a profit contributor. (Up until this point, the investment in the associate may have actually been a losing proposition for the dentist.) Most importantly, though, after the two year mark, the ownership of practice goodwill becomes increasingly blurred. An amortized buy in can provide the needed clarity.

What should be agreed on, from day one, is that after two years the associate and senior dentist will decide whether they want to continue the relationship with plans for a buy in. Assuming both parties are keen, an independent evaluator should be brought in to determine the total value of the practice, including goodwill. The senior dentist then offers the associate the option to buy in at the determined price. Basically, the senior dentist lets the associate know that he or she can buy in immediately at that price. However, if the associate chooses to wait, the value of the practice's goodwill will increase and, therefore, so will the buy in price. (In the preliminary agreement, the two parties can decide on how long the initial buy in price



will be available, be it 60 or 90 days, etc.)

If the associate doesn't exercise the right to buy in, the senior dentist must consider whether or not to keep the associate on board. Often, it is inadvisable to have an associate in your practice who has decided not to buy in because, as mentioned, the ownership of practice goodwill becomes increasingly blurred as time progresses. To simply tell an associate that he or she can remain in your practice indefinitely, but that the goodwill belongs to you, will be for naught if the associate leaves at a later date armed with a full complement of your patients.

Let's look at some hypothetical figures to illustrate just how the buy in could occur. If the senior dentist's practice is valued at \$300,000 (50 per cent assets and 50 per cent goodwill), half the practice can be sold to the associate for \$150,000. The senior dentist asks for a \$25,000 down payment, which leaves a balance owing of \$125,000 to be paid off over a three- to five-year period (no sooner and no later). Rather than going to the bank, the associate pays the remaining amount through a percentage of his or her remuneration. So, if the associate is earning 40 per cent of his or her collected revenue before the buy in, the senior dentist may subsequently pay 25 per cent, holding back the remaining 15 per cent to be put toward the buy in. Interest is computed on the declining balance. (Ideally, you should come up with a sliding scale compensation scheme. For instance, you might want to pay 40 per cent on the first \$20,000, 45 per cent on the next \$25,000 etc.)

For the associate, this option has many advantages. The dentist is, in effect, financing the buy in, so the associate does not have to go to a bank to borrow the money. And associates often find that senior dentists offer more competitive interest rates than the banks. Basically, the dentist finances the associate out of the goodwill that he or she has built up and the goodwill that the associate is going to create in the future. In effect, the dentist is willing to finance the associate in

exchange for getting a return on his chart value and because the associate will now be a profit contributor. In essence, the dentist has created an opportunity to make profit and he or she is creating stability for the associate. The associate has an incentive to work hard to pay off his or her debt internally, so that he or she doesn't have to turn to the bank for additional financing.

What must be clear is that during the time that the associate is making payments, he or she remains an associate. He or she has no ownership in the practice and does not make any revenue from the hygiene department. The associate's objective is to increase production and collections so that he or she can pay off the senior dentist as fast as possible. In the agreement, set three years as the earliest date for final payment and five years as the latest. An early pay off date should not be permitted, because the senior dentist is depending on the profits generated by the associate, as well as the payments plus interest, to compensate him or her for accepting today's practice value on a transaction that will actually be completed in three to five years.

The senior dentist is making a trade off. He or she is forfeiting the potential for practice goodwill to increase (and therefore to receive a higher purchase price down the road) for the gain of stability and increased revenue from the associate. In other words, if the dentist hadn't locked in at the practice valuation figure, the goodwill would likely have increased but he or she wouldn't have profited, in terms of dollars and practice stability.

During this three to five year period, the associate has the ability to use the goodwill that he or she is helping to create, the goodwill that the primary dentist is creating for him or her, and his or her ability to earn money in a viable business, to allow him to pay for the buy in. Known as "sweat" equity, it allows the associate to work hard and pay for the buy in from the increased profitability he or she brings to the practice.

Mapping It Out Even More

If you think that mapping out the

plans for a buy in from day one is premature, think again. That's just the beginning. Before your associate even enters the operatory, the two of you should have a plan for what happens once he or she is no longer an equity associate but a cost-sharing partner. The options vary from practice to practice, but here's just one guiding example.

The associate, who once had the luxury of ignoring overheads, now pays his or her own assistant, hygienist, administrator and 50 per cent of the rent (assuming he or she has an equal number of operatories). Some overheads, such as shared administrative staff and utilities, should be split proportionately, based on production figures. Hygiene revenue from the associate's patients now goes to the associate (in contrast to the equity period, when all hygiene revenue went to the senior dentist).

Details such as the hours you'll both work should also be discussed from day one, not after the first year. And if the senior dentist plans to retire eventually, and sell off his 50 per cent, the associate should be given first right of refusal so that he or she doesn't get stuck with an incompatible partner.

The beauty of this balanced agreement (which clearly must be customized to each practice) is that both parties have the ability to say yes or no to the buy in after one year. During this "trial marriage," they have had the chance to get to know one another and determine the potential for a long-term relationship. With a proper agreement in place (which should be created and/or reviewed by your lawyers and accountants), protection for both parties exists. The associate benefits from a sheltered buy in. It isn't necessary to commit to overheads until he or she is ready, after his or her equity in the practice has been paid. The senior dentist benefits from increased revenue and the comfort of knowing that an associate won't be hijacking his or her patients elsewhere.

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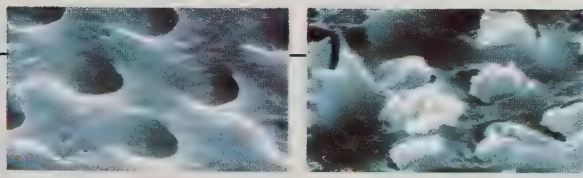
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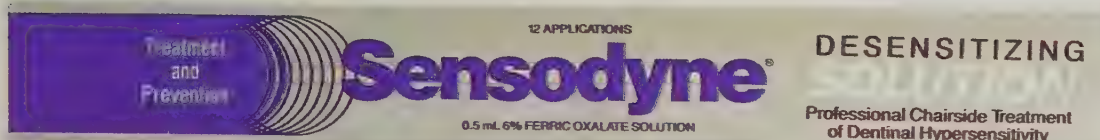
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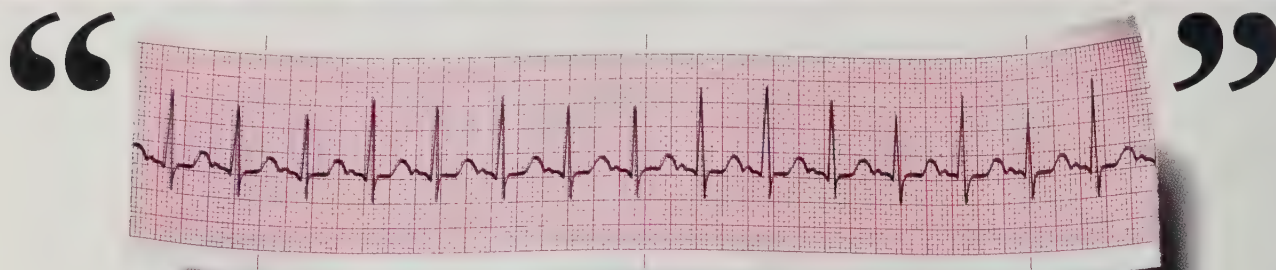
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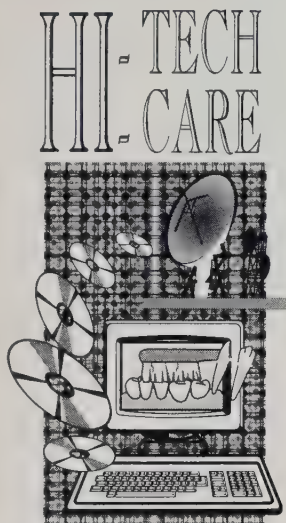
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The Practical Dental CAD/CAM in 1993

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ABSTRACT

For three years now, it has been possible to find a number of dental CAD/CAM systems, i.e. systems that can produce dental prostheses with robots or computers, on the market.

These systems use palpation devices or cameras to make impressions. They either transmit the data to produce the die, the counter die or some intermediate elements directly, or use the possibilities of the computer to reconstruct the most simple pieces or the most complex prostheses on a monitor. In the latter case, CAD/CAM systems – in the full sense of the word – produce a model on a monitor before manufacturing the prosthesis.

According to this study, all the systems belong to the same family but their performances as well as their costs and their clinical testing vary considerably. A more detailed analysis would therefore be required.

Nevertheless, the CAD/CAM remains the only known prosthetic alternative for the future.

Key Words: Prosthesis, Computer, CAD/CAM, Classification, Handling, Performances

Introduction

Of all the new technologies available to dentists today, none is more likely to drastically change the practice of dentistry in the 21st

century than the dental CAD/CAM.

Because it allows volumetric analysis results to be processed as numerical data; because these data can then be manipulated not only by the human mind but also by advanced computer systems, such as artificial intelligence; and, lastly, because it has a machining or manufacturing system that is non-specific to one kind of material, CAD/CAM has introduced a vast experimental field to dentistry.

It is not at all ludicrous to think that it will soon be possible to handle both the most simple diagnostic analyses and the most complex prosthetic manufacturing processes with CAD/CAM, using materials that will be absolutely revolutionary, intelligent and structure-oriented like the tooth.

All too often, however, the use of the dental CAD/CAM has been limited. This technology has been presented as a prosthetic manufacturing technique because this aspect of its development has been the most spectacular. Since its inception, however, CAD/CAM has been rated at a very high technological level, and its usefulness has certainly not been restricted to prosthetic reconstruction – a fact that many new comers in the field have failed to notice.

Even the first report on CAD/CAM, published in 1973,¹ made it clear that the optical impression technique, or dental

CAD/CAM, encompasses all methods of analysis, including diagnosis and treatment, working in space, and developing means of measurement that are preferably optical.

In her historical study,¹⁻³ Rekow forgot to mention that this technology comes from Europe and was developed with the ambition to really use numerical data for other purposes than the simple production of a metallic object. Tribute must be paid to two great researchers, Altschuler and Swinson,⁴⁻⁷ whose breakthrough experimental attempts in CAD/CAM were so similar to the work Gisy did in on the dental articulator in 1930.⁸

In 1973, the general rule of thumb was to consider every medical treatment as a discriminative analysis (eventually followed by correction) of the group of static and dynamic volumes that form the human body. Logically, the next step in this process was to add scientific precision through the use of mathematical investigation methods. There was only one major step to make forward in this regard, but it took 20 years of struggle, hope and disillusionment before it could be taken.

This step was so large that the optical impression method known today as the dental CAD/CAM, while not exclusively a procedure to make prostheses, is almost always perceived as such. We will

explain this procedure here, dealing only with the machines already on the market or in development, and dismissing all the supposedly existing procedures that no one has been able to control as of yet.

1. Definition

1.1 Basic concept

The traditional method used to make dental prostheses is limited due to its means of data collection (impression), transport (model, die, casting flask, etc.) and final materialization (casting).

This method is based on the principle of capturing certain volumes, specifically those of the preparation and its environment, with an impression paste. These volumes are then transferred to a plaster model, which in turn is used to transfer them to other models until a prosthesis (the ultimate model) is finally made.⁹⁻¹⁰ The original data, i.e. the volumes of the mouth and teeth, are always being stored and transferred in a material form. Although it is easy to work with these data, distortions may occur due to shocks, thermal volumetric variations and other errors.

CAD/CAM, on the other hand, is based on the principle that the data (or impression) collected from the patient's mouth must be digitized as quickly as possible. In effect, digitization allows the clinician to avoid most if not all of the hazards associated with the use of material impressions to collect data (on the spatial form of the teeth, for example) such as humidity or temperature, or simply a lack of experience, all of which are impossible to control.

To reproduce the patient's mouth using CAD/CAM, the clinician relies on a known volume depicted on a computer monitor, and not on a plaster or wax model. The important thing with CAD/CAM is to take the x-y-z coordinates of all the elementary points that form the surface of the patient's mouth. In order to avoid all unwanted fluctuations, the clinician only uses actual dental material at the final stage of treatment, which is often the production of the prosthesis (Fig. 1).

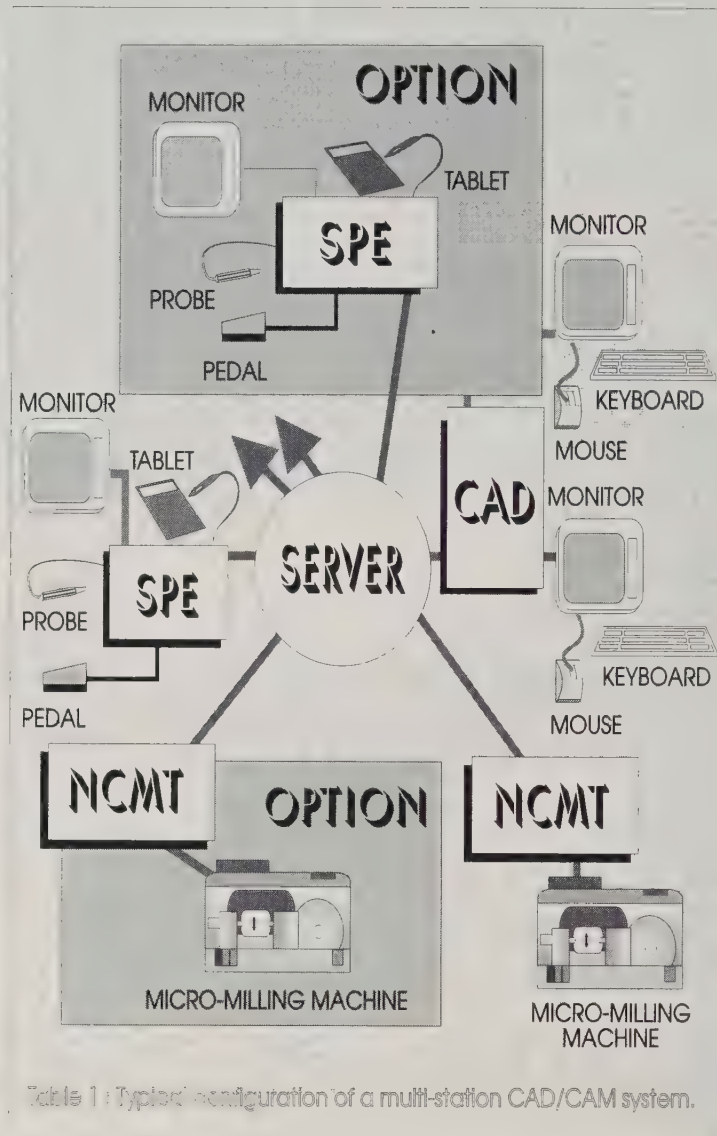


Table 1: Typical configuration of a multi-station CAD/CAM system.

1.2 How CAD/CAM was developed

From the beginning, it was clear that data must be collected and stored either as digits or numbers, because their values are constant. This, logically, led researchers to work with computers. They were also compelled to use this technology because the mouth cannot be defined, at least for the time being, as a series of cubes and spheres, but only as a group of complex surfaces (said to be warped because of their tormented and irregular features). This makes imaging and shaping them in one plane, i.e. their modification or reproduction with just pen and paper, an impossibility.¹¹

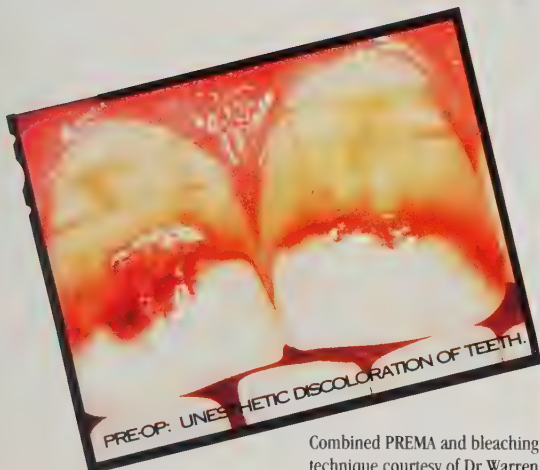
It was also quickly understood that practitioners needed the com-

puter to do more than find and record numbers, they also needed it to "perform" dentistry. This is the principle behind the dental CAD/CAM. From a simple device to make copies of the mouth, CAD/CAM's originator's have developed systems that can – in a very short time – make impressions, models, crowns, and bridges, etc.¹² These systems can create images of new non-existing surfaces – basal and lateral surfaces of inlays, lateral surfaces of crowns, etc. – in a patient's mouth, which correspond exactly to the therapeutic wishes of the practitioner.

1.3 How These Technical Results Were Achieved

Today, five models of the dental CAD/CAM are on the market and four others will be introduced dur-

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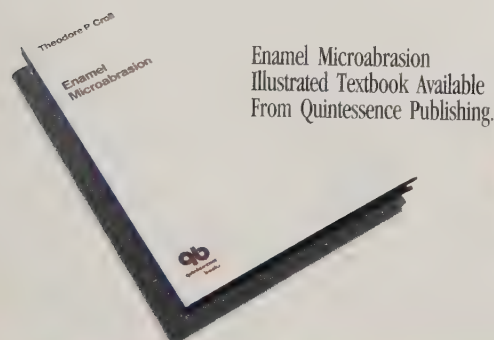
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ing the next five years. This, in itself, is a major technological breakthrough.

However, not all the models available today have the same degree of sophistication. Some are rather primitive, while others are more advanced. Taking these systems in a geological cross-section, it is possible to see all the strata in computer technology and the evolution of the dental CAD/CAM.

Each of these systems has the same purpose, namely to reduce the number of steps required to complete specific dental procedures. For example, minimizing the data transfers from paste to plaster, from plaster to cylinder, etc., CAD/CAM means manufacturing the prosthesis directly with the data taken from the patient's mouth and, at the utmost, it means staying analogical. In short, it is proceeding directly from paste to crown.

The most typical example of a CAD/CAM system in the non-dental world is copying a drawing or sculpture with a pantograph. It is more or less what the CAD/CAM "baby," the Celay system from Nickroma, offers.¹⁶ This system, the last to appear on the dental market, is also the most simple.

It is undoubtedly because titanium is hard to work with that led Andersson¹⁷ and Nobelpharma to develop a system (Procera) that only reams the exterior of the prosthesis, as opposed to manufacturing it directly with the end of a pantographic arm. In this case, the interior is copied in graphite carbon, a material that is soft and conductive. The carbon copy is then placed in an electro-eroding machine to insure a precise manufacturing of the interior of the titanium coping. The Procera system takes the process one step further, by moving CAD/CAM closer to a pure measuring (impression taking) and manufacturing process.

A more advanced CAD/CAM system, as imagined by other researchers, would link a computer directly with the pantograph and the milling unit. Many researchers have worked toward this goal since Mushabac¹⁸ first wanted to use the technique (particularly the Tavor

(Switzerland) and Rekow (USA) teams). The principle is this: if the pantographic arm is moved 5.0 mm to the left, we measure 5.0. A calculation unit is placed between the copying and the manufacturing unit to measure each move and identify the position of all the points the operator wants to record. The DCS Titan¹⁹ and DentiCAD² systems, which originated from Mushabac's efforts, introduced digitization in primary pantography. However, even with an exceptionally able team operating them, these systems don't approach the ideal CAD/CAM concept. There are still many technical problems that remain to be resolved.¹⁹

Measuring, in itself, takes away a certain amount of energy from the body or object being measured, which reduces the true value of the data collected. The more a system is invasive, i.e. the more its action is aggressive, the more significant this taking away of energy becomes. And the more this variation of energy is significant, the more the object is likely to vary in its mensuration (a modification of energy almost always produces a volumetric distortion).

In short, to get to the extreme limits of precision, one must get to the extreme limits of respect for the object being measured (which in itself forms a contradiction). And that is exactly the forgotten principle behind optical impression or CAD/CAM in dentistry: it is today the least aggressive method of collecting data to describe the shape of an object. This explains our technological choice, and the development of the optical wave CAD/CAM.

With this type of CAD/CAM, the optical waves hardly "touch" the object being measured – the quantity of energy taken away is so low that it can be said the impression-taking or measuring has not modified it at all (this would be false on a quantum scale).

Two systems have opted for the optical instead of the pantographic solution. The first and most sophisticated, developed by the author, is the Sopha CAD/CAM.²¹ The second one, the Cerec system, is more

simple, and was designed by Moermann and Brandestini.¹³⁻¹⁵

These systems, which have no middle mechanism, are closer to the pure theory. With optical capture, it is possible to digitize the impression immediately and, therefore, to use the computer almost right away. From the more simple Cerec system, which reproduces the cavity of the preparation in order to make a ceramic piece with no occlusal surfaces, to the more complex Sopha CAD/CAM, which goes as far as to suggest an occlusion model (gnathological or functional), nothing seems impossible using these systems.

Every research team working on CAD/CAM has dreamed of making impressions using optics. The literature has made this abundantly clear. Where two teams have succeeded, to date, many have failed.³ Impression taking with undulatory means will undoubtedly supplant all other methods in the near future, even if our training still pushes us toward mechanical systems that recall the articulators.

2. The Systems

As can be gathered from the dental literature, a certain number of CAD/CAM systems are available, or soon will be. The intent, here, is not to choose the best available system, or even to rank them in order of preference. (This would be unethical, since the author is a consultant for the Sopha team).

2.1 The Celay System

The Celay system was never intended to be a CAD/CAM system, but it is decidedly geared toward robotization. It was designed by Eidenbenz²² of the Zurich Dental School, where it has been tested and refined for more than two years. Introduced to dentists for the first time at the 1990 Munich Exhibition, it is now produced and distributed by a Swiss firm, Mikroma.²³

It has two units, one that palpates the piece to read all of its surfaces and another that manufactures it in a ceramic block by following the manual movement of the sensor by means of a pan-

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The practitioner first makes a model of the inlay he wants to produce. This kind of direct impression is made from a resin material hard enough to resist the micro-sensor's palpations. It can be taken directly in the mouth or from a model.

After having attached a pre-formed ceramic cylinder of the appropriate size to the machining head (a turbine with lubrication), the practitioner sets the resin transfer inlay (or pro-inlay) under the micro-sensor's arm.

He then follows the surfaces and contours of the transfer inlay in order to transmit, with the pantographic arm, an identical impulse to the turbine's head, which shapes the ceramic in an exact replica of the prosthesis. This is done by hand and takes about 20 minutes.

To complete the piece, the practitioner has only to dress its surfaces.

Personal analysis

Despite the fact that this system has no long-term clinical records, is limited to inlays and onlays, and requires the making of a transfer piece, it has some advantages. For the low cost of approximately \$20,000 U.S., it allows practitioners to produce ceramic inlays with occlusal surfaces in just 20 minutes. The training time is fast and the precision of the final product is in the order of 100 μm .

2.2 The Procera System

Designed by Andersson¹⁷ and developed by Nobelpharma, the Procera system is a complex version of the Celay system. It was introduced for the first time in Sweden in 1987, and combines pantographic reproduction with electro-erosion manufacturing. The system is available with a unit that allows the practitioner to solder a titanium bracket between two Procera crowns.

The Procera system produces

crowns (for ceramic coating) made of titanium.

Handling

A traditional preparation die is produced and then placed under the reading head of a pantograph, which reads it (circular movement) while guiding the cutting device with a pantographic arm. The cutting device produces two copies of the die, one in a titanium cylinder that will become the crown's extrados and another in a graphite carbon cylinder.

The carbon die is used as an electrode in an electro-erosion apparatus to precisely manufacture the interior of the titanium crown. The procedure is completed by placing ceramic on the crown.

Personal analysis

Three carbon electrodes are generally needed to complete a prosthesis. Many pieces can be produced simultaneously, but the system is relatively slow (the procedure can take two full hours). The system is dependable (both Nobelpharma and Andersson have never lacked imagination). The fact it produces a titanium crown is seen today as an advantage not to be overlooked.

2.3 The DCS Titan System

The results of the work undertaken by Schlegel, Tavor and Zaborsky have produced the DCS Titan or DUX system, which was introduced in Berlin in 1989.²⁴

This system can actually digitize data. The DCS Titan collects data with a reading arm and converts it into digital data. This data is then fed into the computer, which ultimately guides the manufacturing unit.

The system comprises a palpation unit that records data from a plaster model, a computer and a numerically-controlled milling machine. It sells for \$100,000 to \$150,000, and can manufacture titanium crowns and bridge infrastructures in less than an hour.

Handling

After casting the plaster model, the practitioner uses a special micro-sensor to feel the preparation

and the adjacent teeth in order to record the surface data on computer.

At the CAD phase, the external and internal contours of the required crown are reproduced in a model. This is used to create a digitized manufacturing program, based on the data that was recorded with regard to the preparation and the crown. (A variation was introduced last year in Cologne that allows the manufacturing of small pontics.)

Manufacturing is performed by a traditional numerically-controlled machine-tool (NCMT), which can produce a titanium infrastructure within an hour.

Personal analysis

This system offers all the advantages of the Procera system, but has a better evolution capability, costs less and is possibly easier to handle (but that remains to be proven). The clinical results show a precision of 100 to 140 μm .²⁵⁻²⁶

2.4 The Cerec System

Invented by W. Moermann and M. Brandestini¹³ and developed by Siemens, the Cerec system was introduced for the first time in 1985,¹⁴ i.e. five years after its invention. It is therefore a well-tried system, even if it has not evolved very much.

The Cerec system meets the principles of the optical impression technique. It comprises a camera (approximately 65,000 pixels), an image-processing unit (version 2.0) linked to a viewing screen (of the Macintosh monochrome type) and, since early in 1992, an electrically-driven 2.5 axle micro-milling machine.

This system can be put in the category of the CAM systems. Modelling is done line by line using isoplane, not on surface, to manufacture the internal elements of ceramic inlays, onlays or facets.

Handling

The cavity is prepared according to very precise criteria (margins at 90 degrees from the floor) and without bevel (ceramic inlays);

■ the optical impression is pro-



duced in the patient's mouth or on a model after being covered evenly with a white coating to make filming easier;

- depth of field is adjusted, margins are defined and contacts are established on a monitor with a rolling ball;
- a polyhedral ceramic pre-form (Vita or Dentsply) of the size indicated by the computer is installed. Manufacturing takes less than six minutes;
- the occlusal surface is produced and colored by hand in the patient's mouth or on the model.

Personal opinion

With this system, the occlusal surface must be done by hand. This is a disadvantage, since there is a risk of removing too much material. The system costs \$55,000 U.S. It has been tried by many dentists throughout the world, is fun to use, rational and simple. The precision of the margins is in the 80-120 μ m range.

2.5 The Sopha Dental CAD/CAM System

This French system was invented by the author. It was developed further by many companies before it was taken over by Sopha Bioconcept, a dental branch of Sopha Development, one of the main leaders in medical computer equipment which has had a world reputation in imaging for over 20 years.

Obviously, this system, which took 20 years to be developed, performs the three main functions of a dental CAD/CAM system:

- optical impression-taking (multi-views) with a CCD camera (approximately 250,000 pixels) linked to an image processing system (version 3.1), respectively called the Opticast and the Cubic;
- surface construction and modeling of the future prosthesis, the preparation and the adjacent and antagonist teeth on a polychrome monitor, the BioCAD;
- manufacturing with a numerically-controlled machine-tool, the DMS.

The purpose of this system is to

produce anterior and posterior crowns (1989-90), mono- and multi-faced inlays (1992), ceramic infrastructures (1991) and even bridges (1993) under static (1990) and dynamic occlusion (1993).

Handling

Cutting according to the practitioner's methods and the material used;

- impression-taking on model with the Opticast; many views (generally eight) of the preparation and of the adjacent and antagonist teeth;
- definition of the cuspids, fissures, contacts and margins on monitor (method similar to the Cerec);
- automatic or semi-automatic construction (five steps), on these foundations, of the future prosthesis with the CAD program specifically developed for this procedure. If desired, it is possible to modify or control the space for the cement, the crown's shape, its margins and its occlusion;
- automatic manufacturing of the prosthesis in ceramic (1991) or titanium (1992). Fifteen to 60 minutes are required to produce the prosthesis;
- characterization by the operator according to traditional methods.

Personal opinion

Training is simple and is geared toward technicians, assistants and hygienists. A few days are sufficient and no former computer training is needed.

This system is the second one that has undergone enough clinical testing (over 30 units sold to date) to identify its limits and possibilities. The University of South Carolina has used a unit for almost four years now, and it has shown a margin precision ranging from 0 to 60 μ m.

The Sopha Dental system is extremely evolutionary and, because it has a central working unit, it opens the door to new possibilities. Both diagnosis and treatment software can be added to this system.

Sopha has launched a new generation of systems that are designed

more for laboratories or practice-integrated laboratories, and can produce pieces completely in ceramic (Empress by Voclar or Dicor MGC by Dentsply) for inlays, onlays, crowns and infrastructures. Unfortunately, it has dropped the composite structures, which may have been a mistake.

Working in the patient's mouth is still difficult, and the cost of the three components needed to perform this work is high (\$170,000 U.S.). To counteract this problem, Sopha Dental has suggested that the work done in the mouth with the system be temporarily stopped. It has developed an automated camera system to make this possible.

Naturally, as the developer of the Sopha system, the author's opinion of it may be somewhat subjective.

2.6 The Systems Being Developed

Four systems are presently being developed:

The Japanese system: Under the supervision of Professor Tsutsumy, this system has the three usual CAD/CAM components, i.e. the camera, the CAD and the NCMT. The system is only at the development stage, but its inventor, Dr. Fujita, has already produced some crowns with it.²⁷⁻²⁹ No clinical experience has been reported to date.

The Cicero system: This system uses the principles of the Sopha CAD/CAM system, but instead of manufacturing the interior of the crown, it produces a special die according to the data recorded by a laser-driven optical sensor that moves along the margins. This special die is then covered with a coat of metal followed by coats of ceramic.³⁰ This procedure is presently done by hand. When it is completed, the system uses a NCMT to manufacture the exterior of the crown. No clinical experience has been reported to date.

The DentiCAD system: This system is better known as the Rekow system. Since it has been extensively covered in a recent article,³ we will just refer to it briefly, here. No clinical experience has been reported



to date on the work done with the Bego probe.

The Dens system: Developed by Rohleder and Kammer in Berlin,³¹ this system is still in its early stages of development. However, a prototype was introduced in Cologne this year. It comprises an optical sensor that is very fast and a NCMT that can work titanium and was developed to this end. It has no CAD yet. No clinical experience has been reported to date.

2.7 The Krupp System

This system deserves to be mentioned because it falls between the traditional method and the robot.³² Made with a special wax, the prosthesis is used to mould special electrodes that will reproduce the external and internal surfaces, separated at the line of the most important contours. The two moulded electrodes are used, as with the Procera system, to process by electro-erosion non- and semi-pre-

cious metals of the Dentitan or Endocast type. It is possible to produce all-metal pieces like crowns and bridges using this system. No clinical experience has been reported to date, but the precision recognized by all who tried it is in the order of 40 μm .

References

1. Duret, F. Empreinte Optique. 1973.
2. Rekow, D. Computer-aided design and manufacturing in dentistry: A review of the state of the art. *J Prosth Dent* 58(4):512-516, 1987.
3. Rekow, D. CAD/CAM in dentistry: A Historical perspective and view of the future. *J Canad Dent Assoc* 58(4):283-288, 1992.
4. Altschuler, B., Taboada, J., and Segreto, V. Intra Oral Dental Laser. *SPIE* 70:347-350, 1975.
5. Altschuler, B. Applications of interferometry and optical metrology in dentistry. *SPIE* 89:40-46, 1976.
6. Altschuler, B., Taboada, J. and Altschuler, M.D. Holodontography, an introduction. *SPIE* 182:192-196, 1979.
7. Altschuler, B., Taboada, J. and Altschuler, M.D. Laser electro-optic system for three dimensional (3D) topographic mensuration. *SPIE* 182:192-196, 1979.
8. Gysi, A. An Analysis of the development of the articulator. *JADA* 17(8):1401-1411, 1930.
9. Duret, F. Vers un nouveau symbolisme pour la réalisation de nos pièces prothétiques. *Cah Prothèse* 50:65-72, 1985.
10. Duret, F., Blouin, J. and Nahmani, L. L'empreinte optique dans l'exercice du cabinet. *Cah Prothèse* 50:73-110, 1985.
11. Duncan, J. and Law, K. *Computer-aided sculpture*. Cambridge University Press, 1989, New York.
12. Duret, F. Computer-controlled designed and manufactured restorations, 8th international symposium on ceramics, Sept. 10, 1989.
13. Mormann, W., Brandestini, M., Ferru, A. et al. Marginal adaptation von adhasiven porzellaninlays in vitro. *Schweiz Mschr Zahnmed* 95:1118-1129, 1985.
14. Mormann, W. and Brandestini, M. *Die CEREC Computer Reconstruction*. 1989, Quintessenz Binliothek. Berlin.
15. Crawford, P.R. CAD/CAM in the Dental Office: Does it Work. *J Canad Dent Assoc* 57(2):121-123, 1991.

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16. Mikrona. CELAY system. Dentechnica Cologne. catalog: 1-4, 1990.
17. Andersson, M. and Andersson, M. Swedish patent. no 8400396-1: 1987.
18. Mushabac, D. U.S. Patent. no 4 184 312: 1976.
19. Hegrenbarth, E. Titan und keramikfortschritt oder kompromib (1) Quitesenz, Zahntech, 17, 39-46, 1991.
20. Duret, F. and Preston, J. Current Opinion in Dentistry, CAD/CAM imaging in dentistry. *Current Science* 1(2):150-154, 1991.
21. Duret, F. The Sopha Dental CAD CAM, 1991.
22. Eidenbenz, S. The copy milled inlay, 1992.
23. Andersson, M., Bergman, B., Bessing, C. et al. Clinical results with titanium crowns fabricated with machine duplication and spark erosion. *Acta Odontol Scand* 47:279-286, 1989.
24. Tavor. DCS system for the production of crown and bridge, 8e international symposium on ceramique, Sept 10, 1989.
25. Schlegel, K., Tavor A. and Zaborsky, J. Das DCS-Titan-System-Ein neuer weg der Kronentechnik. *Die Quintessenz* 3(1):461-468, 1991.
26. Schlegel, A., Besimo, C. and Donath, K. In-Vitro-untersuchung zur marginalen passagenaulkeit von computergefrasteten titankronen. *Schwetz Monatschr Zahnmed* 101:1409-1414, 1991.
27. Fujita, T., Yamamura, M., Watanabe, H. et al. Preliminary report on construction of prosthetic restorations by means of computer aided design (cad) and numerically controlled (nc) machine tools. *Bull of Kenagawa dent. col.* 12:79-80, 1984.
28. Kawanaka, M. Development of the dental CAD/CAM System. *J Osaka University* 35(1):206-238, 1990.
29. Kimura, H., Sohmura, T. and Watanabe, T. Three-dimensional shape measurement of teeth (part 6) - measurement of tooth model by tilting method by means of the double sensor laser displacement meter, and the simulation of occlusion. *J Japan Soc Dent Mat Devices* 9(4):179-686, 1990.
30. Elephant. presentation du CICERO system. 1992.
31. Dens, G.B. Presentation du Dentech system, 1992.
32. Korber, E. and Lindemann, W. Funkenerosionstechnik zur Herstellung von Festsitzendem Zahnersatz. 1989.

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TABLE 1

Body weight	Dosage in capsules of Rovamycin '250' (750,000 I.U. Spiramycin/capsule)
15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

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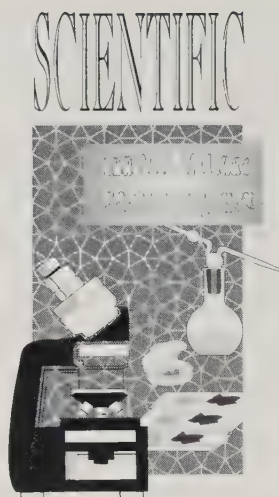
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Osseointegrated Implants: Their Application In Orthodontics

Debora C. Matthews, DDS

Introduction

The use of endosseous implants to effect skeletal change of the craniofacial complex and to facilitate orthodontic tooth movement has been periodically reported in the scientific literature since 1945. This paper will serve to summarize the research to date, as well as to highlight the most current studies and the conclusions we can draw from them.

Historical Perspective

The primary objective for clinicians using dental implants has been the long-term fixation of the implant to bone, commonly known as osseointegration. Osseointegration has been defined as a direct structural and functional connection between ordered living bone and the surface of a load-carrying implant.¹ A mechanical definition suggested by Steinemann et al² includes resistance to tensile and shear forces between the implant and its interface. It is these tensile forces that are important with respect to orthodontia. However, there is a paucity of information in the dental literature with regard to the effects of orthodontic forces on implants, either from a mechanical or a biological perspective. Fortunately, their use in prosthetics has been well researched.

While an increasing number of

implant systems are now available,³ the best and most consistent success is obtained with osseointegrated implants *ad modum* Branemark. These titanium implants have been in use in a clinical setting since 1965,⁴ and their long-term success in edentulous patients is well documented. These accomplishments should not automatically be correlated to the treatment of partially edentulous patients,⁵ however, as the presence of teeth may present other variables that must be taken into account. Similarly, the success clinicians have enjoyed using implants in the prosthetic treatment of patients does not directly translate to orthodontic applications.

Gainsforth and Higley,⁶ in 1945, were the first researchers to report that it might be possible to achieve orthodontic anchorage in basal bone using implants. Their research involved placing vitalium screws and stainless steel wires in dog mandibles. After orthodontic force was initiated, the screws were lost within 16-31 days. In a single case report, Linkou⁷ described the use of endosseous blade implants in conjunction with rubber bands to retract maxillary anterior teeth. Unfortunately, there was no report of the long-term stability of his results.

Adell et al⁸ cite unpublished data from a 1970 project that involved placing Branemark implants in dogs. The implants remained immobile, regardless of the

magnitude or direction of orthodontic force applied.

Many investigators have considered using endosseous implants, made from a variety of materials and with varying geometrics, as anchors to facilitate orthodontic and orthopedic movements.⁹⁻¹⁸ Some of these devices failed to osseointegrate,¹³ and many were evaluated only with respect to the orthodontic loading forces between implants.^{9,13,15}

Orthopedic Applications

In addition to investigations on the use of implants as anchorage units to expedite tooth movement, research has been undertaken to explore the possibility of using implants to move facial bones and influence jaw growth.^{14,17,19}

Although teeth are routinely used in the application of force to bone for the purpose of effecting skeletal change, this indirect application of force often causes undesirable tooth movement. Therefore, the use of skeletal anchorage to apply force directly to bone would be more desirable. Two methods of skeletal anchorage have been reported: ankylosed teeth and endosseous implants. Ankylosed teeth have limited longevity due to the usual sequelae of root resorption and exfoliation. In addition, their location may not facilitate the optimal correction of the skeletal deformity. Endosseous implants, on the other hand, remain stable over long periods of



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time, even when loaded,¹ and can be placed in various locations within bone, with varying degrees of success.

Smalley and associates¹⁴ placed titanium implants in the maxillae and zygomatic bones of *Macaca nemestrina* monkeys. The implants were connected to fixtures that protruded through the skin, which allowed traction to be placed directly to these bones. Six hundred grams of force was applied to the implants over a period of 12-18 weeks. The result was a marked (up to 8.0 mm) anterior repositioning of the maxillofacial complex due to skeletal and sutural remodelling, as well as actual disarticulation of these facial bones at the suture line in some of the monkeys. This was accomplished without concomitant tooth or implant movement. The authors speculated on the potential application of this technology in the treatment of patients with severe maxillary hypoplasia or other craniofacial abnormalities. Practically speaking, some adjustments would have to be made. Extraoral implants could leave permanent facial scars and are not likely to be socially acceptable. Intraoral implants, although not ideal mechanically, would seem to be the only alternative.

Work by Odman and others^{16,19} at the University of Goteberg has shown that even this approach may not be the answer, at least in growing patients. They placed titanium implants in the mandibles of five young Pigham-strain pigs that were in different stages of dento-alveolar development. One pig served as a control. The five test pigs each received three fixtures in the mandible and one in the maxilla. Sixty per cent of the implants placed in the cuspid region were lost. The remaining fixtures did not move with the adjacent teeth, but behaved more like ankylosed teeth. Thus, while the position of the fixtures was stable, growth in adjacent areas continued in all three dimensions. Vertical growth of the alveolar process continued despite placement of the implants, while sagittal and transverse growth was more pronounced. Teeth distal to the fixtures erupted in a deviant pattern. As a result of these findings

and their knowledge of human growth patterns, these authors recommend that no osseointegrated fixtures be installed posterior to the canine region until the permanent dentition is fully erupted.

Orthodontic Anchorage

Anchorage control is a major concern in the design of all orthodontic appliances. Anchorage can be quite stable when extraoral devices are employed, but – short of placing implants in the zygomatic arches – it is dependent on the patient's cooperation. Intraorally derived anchorage is unstable, necessitating the use of appliances that can be complicated and inefficient.⁹ There is an obvious need, therefore, for intraoral anchor points that are predictably stable, biocompatible and comfortable. Osseointegrated implants appear to meet these criteria.

Roberts et al²⁰ were among the first to evaluate the effects of orthodontic-like forces on titanium implants. They placed 3.2 mm X 8.0 mm acid-etched threaded implants in rabbit femora using a two-stage surgical procedure, with a six-week period of unloaded healing (analogous to a period of four to five months in humans). A 100-gram load was applied for four to eight weeks by stretching a stainless steel spring coil between the implants. Nineteen of the 20 implants remained rigid. The successful bony fixation of these implants was attributed to a number of factors, including the maintenance of vital osseous margins around the surgical defect, preservation of subperiosteal osteogenic capacity, a suitable healing period prior to loading, and the firm stabilization of the implant within vital bone.

Studies in dogs by Turley and associates¹⁷ demonstrated that the stability and anchorage function of loaded (300 gram) implants over nine to 12 weeks may be related to the size of the implant as well as to an adequate non-loaded healing period. They placed a total of five small (2.4 mm X 6.0 mm) one-stage implants, one in each of the following areas: the mandibular alveolar ridge in the area of the third and fourth premolar; the contra-lateral

lingual mandibular cortical plate; palatal to the maxillary alveolar ridge between the first and second molars; the zygomatic arch and the temporal buttress (an extraoral approach). The intraoral implants were loaded against the adjacent premolar teeth with a coil spring. Over a period of 18 weeks, these one-stage implants had a 53 per cent failure rate. Orthopedic movement was attempted between the zygomatic and temporal fixtures, using a closed coil spring with 1,000 grams of force. As expected, this resulted in the compression of the zygomaticotemporal suture and resorption of the bony margins. Large (6.0 mm X 4.75 mm) two-stage implants were placed in the palate and the mandibular edentulous ridge. The mandibular implants were attached to the second premolar by a closed helical loop or open-coil spring, which was activated weekly. Tooth movement of between 0.6 mm and 4.0 mm occurred with no detectable change in implant position and no loss of fixtures.

There are a number of points to consider prior to extrapolating data from animal studies to human orthodontia, particularly with regard to both orthodontic anchorage and orthopedic forces. At the very least, there are species differences to take into account. Custom-fabricated implants were used in many of the studies, making comparisons between studies or from these studies to clinical practice impractical. A wide range of orthodontic forces have been applied from a few grams to more than a hundred grams. To date, these inconsistencies, together with a lack of long-term follow-up, have made it difficult to draw definitive conclusions from the literature.

Clinical research is represented by a limited number of case reports. In 1988, Odman and group¹⁰ reported on the use of Branemark implants for orthodontic anchorage in two orthodontic patients. In the first case, an impacted maxillary canine was brought into occlusion for a 65-year-old woman with bilaterally missing molars. The second case involved a partially edentulous 39-year-old man who pre-



sented with mandibular anterior crowding. Two fixtures were placed in each side of the posteriorly edentulous mandible and temporary prostheses were placed six months later. These prostheses were used for orthodontic alignment, including distalization of the canines. Unfortunately, there was no mention of the orthodontic forces used, nor of any long-term follow-up.

Roberts et al¹¹ recounted a case in which custom-made titanium implants were used to intrude and mesially drive the mandibular second and third molar into the knife edged, atrophic extraction site of a first molar. The cover screw secured one end of the anchorage wire to the implant and the other end was attached to the ramus. Over a period of 30 months, a 408-gram force moved the lower molars 10-12 mm. Longitudinal cephalometric analysis showed that the implant did not move. A histomorphometric analysis of the bone's fluorescent tetracycline labels, performed prior to removing the implant, revealed a high rate of remodelling (30 per cent/year). Roberts and colleagues believe that the long-term maintenance of a loaded osseous fixture is associated with a continuous remodelling of the interfacial and supporting bone. It is clear from the histomorphometric analysis of this patient that a high rate of remodelling continued long after the initial postoperative healing process was complete.

The first prospective clinical study was performed by Higuchi and Slack.²¹ They evaluated the efficacy of osseointegrated implants used as anchorage units to facilitate orthodontic tooth movement in seven adult patients. These patients had no maxillomandibular disharmonies and no pre-existing temporomandibular pain or dysfunction. The alternative treatment proposed for these patients included reverse-pull headgear or the protraction of anterior teeth, with the creation of an edentulous space in the region of the premolars. In a two-stage procedure, 10.0 mm titanium implants were placed bilaterally in the mandibular third molar region in six patients, and in the

first molar region in one patient who was missing both six-year molars. A customized composite crown, with an edgewise orthodontic bracket secured onto it, was placed over the abutment. Initially, 150 grams of force was applied. This was later increased to 400 grams. All 14 of the implants remained clinically stable throughout treatment and the patients were treated satisfactorily over a period of 17-30 months.

Complications

Roberts et al¹¹ noted that in four other patients receiving orthodontic treatment via the use of endosseous implants for anchorage, there were some soft tissue complications. All experienced significant inflammation around the implant, which was controlled by careful brushing and the topical application of chlorhexidine. There was an exacerbation of this peri-implant inflammation in both of the women in the group when the stainless steel wire was attached to the titanium post. The authors speculated that this may have been due to a sensitivity reaction to the nickel in the stainless steel (when a B titanium alloy wire was used, the inflammation subsided). This is contrary to their earlier study on rabbits, in which they concluded that dissimilar metal reactions between titanium and stainless steel are relatively insignificant.²⁰

Higuchi and Slack,²¹ on the other hand, found no such reaction in their patients. There was mucosal irritation from the composite crown and the arch wire connecting the abutment to the second molar, however. This was rectified by placing the brackets from the crown and the molar on the lingual. The major complication encountered in this study was a loosening of the abutment screw.

Higuchi and co-authors also mentioned the limitations they encountered in implant placement, which included the mandibular opening capability of the patient, the presence of an opposing maxillary dentition and the soft tissue anatomy. These do not differ from some of the criteria that should be considered when placing implants for prosthetic purposes.⁴

Conclusions

Prior to the use of osseointegrated implants, rigid, reliable anchorage (intra- and extraoral) was only a concept. Current research is exploring the exciting possibilities for the use of osseointegrated implants in the field of orthodontics. However, it is evident that there is still much to be done. Studies dealing with the biomechanics of orthodontic forces on endosseous implants, for example, are sadly lacking. It is believed that osseointegrated implants are best adapted to deal with axial or vertical forces. Transverse or horizontal forces, such as those used in orthodontics (although perhaps not to the same magnitude), have been mentioned as the cause of some implant failures.^{22,23} Jemt et al²² noted that there was pronounced marginal bone loss and loss of osseointegration when the occlusal load was distributed between implants and teeth. They cautioned against treatment involving a "mechanical connection between teeth and implants." Yet, in Higuchi's and Robert's studies, using up to 400 grams of force, none of the implants were lost. The human dentition is said to be capable of producing lateral forces in the order of 30 Newtons³ (which equates to approximately 3,000 grams). Can the occlusal forces involved in the Branemark group's trials be compared to forces used for orthodontic anchorage? This is certainly fodder for future research.

None of the orthodontic research to date has compared the efficacy of maxillary versus mandibular fixtures as anchorage units. Jemt et al²² have shown that maxillary implants are up to 12 times more likely to fail after loading than mandibular implants. To date, only one case report¹⁰ used a maxillary implant for orthodontic anchorage. This is weak evidence, indeed.

The associated costs as well as the cost/benefit ratio of using implants should also be addressed. Does the use of implants in orthodontics shorten treatment time? Will they preclude the need for orthognathic surgery in some cases? How do implants function over the long term if used for orthodontic anchorage and then as a



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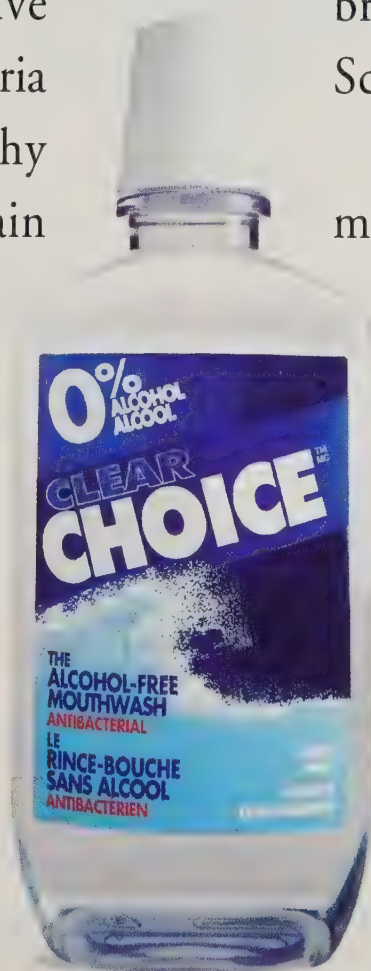
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In time, some of these questions may indeed be answered. Today, however, given the limited amount of research that is currently available, the application of osseointegrated implants in the field of orthodontics should be considered experimental at best. Yet, with well designed, objective research, this burgeoning field holds endless potential for the treatment of dentate patients. ■

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References

1. Albrektsson, T. and Albrektsson, B. Osseointegration of bone implants. A review of an alternative mode of fixation. *Acta Orthop Scand* 58:567-577, 1987.
2. Steinemann, S.G., Eulenberger, J., Maeusli, P.A. et al. Adhesion of bone to titanium. In: *Biological and Biomechanical Performance of Biomaterials*. P. Christel, A. Meunier and A.J.C. Lee (eds). Amsterdam, Elsevier Publishing Co., 1986.
3. Brunski, J.B. Biomaterials and biomechanics in dental implant design. *Int J Oral Maxillofac Implants* 3:85-97, 1988.
4. Branemark, P.-I., Zarb, G. and Albrektsson, T. *Tissue Integrated Prostheses. Osseointegration in Clinical Dentistry*. Chicago, Quintessence Publishing, 1985.
5. Zarb, G. Impact of Osseointegration on Prosthodontics. In: *Tissue Integration in Oral, Orthopaedic and Maxillofacial Reconstruction*. W.R. Laney and D.E. Tolman, (eds). Carol Stream, Quintessence Publishing Co., 1992.
6. Gainsforth, B.L. and Higley, L.B. A study of orthodontic anchorage possibilities in basal bone. *Am J Orthodont* 31:406-416, 1945.
7. Linkow, L.I. The endosseous implant and its use in orthodontics. *Int J Orthodont* 18:149-153, 1969.
8. Adell, R., Lekholm, U., Rockler, B. et al. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int J Oral Surg* 10:387-416, 1981.
9. Gray, J.B., Steen, M.E., King, G.J. et al. Studies on the efficacy of implants as orthodontic anchorage. *Am J Orthodont* 83:311-317, 1983.
10. Odman, J., Lekholm, U., Jemt, T. et al. Osseointegrated titanium implants — a new approach in orthodontic treatment. *Europ J Orthodont* 10:98-105, 1988.
11. Roberts, W.E., Marshall, K.J. and Mozsary, P.G. Rigid endosseous implant utilized as anchorage to protract molars and close an atrophic site. *Angle Orthodont* 60:135-152, 1990.
12. Shapiro, P.A. and Kokich, V.G. Use of implants in orthodontics. *Dent Clin N Am* 32:539-550, 1988.
13. Sherman, A.J. Bone reaction to orthodontic forces on vitreous carbon dental implants. *Am J Orthodont* 74:79-87, 1978.
14. Smalley, W.M., Shapiro, P.A., Hohl, T.H. et al. Osseointegrated titanium implants for maxillofacial protraction in monkeys. *Am J Orthodont Dentofac Orthop* 94:285-295, 1988.
15. Smith, J.R. Bone dynamics associated with the controlled loading of bio-glass-coated aluminium endosteal implants. *Am J Orthodont* 76:618-636, 1979.
16. Thilander, B., Odman, J., Grondahl, K. et al. Aspects on osseointegrated implants in growing jaws. A biometric and radiographic study in the young pig. *Eur J Orthodont* 14:99-109, 1992.
17. Turley, P.K., Kean, C., Schur, J. et al. Orthodontic force application to titanium endosseous implants. *Angle Orthodont* 58:151-162, 1988.
18. Turley, P.K., Shapiro, P.A. and Mof-fet, B.C. The loading of bioglass-coated aluminium oxide implants to produce sutural expansion of the maxillary complex in the pigtail (macaca nemestrina). *Arch Oral Biol* 25:459-469, 1980.
19. Odman, J., Grondahl, K., Lekholm, U. et al. The effect of osseointegrated implants on the dento-alveolar development. A clinical and radiographic study in growing pigs. *Europ J Orthodont* 13:279-286, 1991.
20. Roberts, W.E., Smith, R.K., Zilberman, Y. et al. Osseous adaptation of rigid endosseous implants. *Am J Orthodont* 86:95-111, 1984.
21. Higuchi, K.W. and Slack, J.M. The use of titanium fixtures for intraoral anchorage to facilitate orthodontic tooth movement. *Int J Oral Maxillofac Implants* 6:338-344, 1991.
22. Jemt, T., Lekholm, U. and Adell, R. Osseointegrated implants in the treatment of partially edentulous patients: A preliminary study on 876 consecutively placed fixtures. *Int J Oral Maxillofac Implants* 4:211-217, 1989.
23. Ranger, B., Jemt, T. and Jorneus, L. Forces and movement on Branemark implants. *Int J Oral Maxillofac Implants* 4:241-247, 1989.

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1. Yang Mao, Canadian pediatric asthma: morbidity, mortality and hospitalization data. MES Medical Education Services (Canada) Inc
2. Georgetown Symposium on Analgesics. *Arch. Intern. Med.* 141:273-406, 1981
3. Bradley et al. Ibuprofen vs. Acetaminophen for Knee Osteoarthritis. *The New England Journal of Medicine*, Vol. 325 No. 2, 1991

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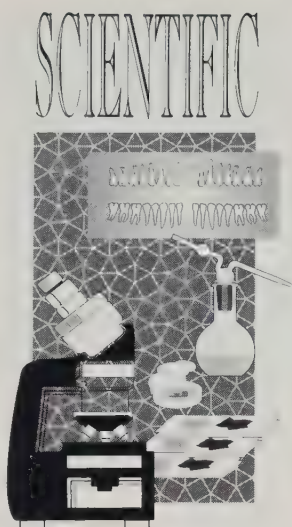
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Oral Health Status and Treatment Needs of an Insured Elderly Population

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ABSTRACT

The purpose of this study was to describe the oral health status and treatment needs of an elderly group of religious sisters whose dental care expenses had been covered for most of their adult life. While the residents displayed high levels of treated dental disease on examination, evidence of a need for further treatment was considered to be a reflection of their decreasing ability to manage their personal home care and the reduction in professional services available to them. The results of this study reinforce the notion that the continuous provision of preventive and educational strategies coupled with accessible treatment services are essential, especially in an aging population.

SOMMAIRE

Cette étude porte sur un groupe de religieuses âgées qui ont eu de bons soins dentaires pendant la plus grande partie de leur vie adulte. Elle a pour but de décrire leur état de santé bucco-dentaire et les traitements dont elles auraient besoin. Ces religieuses habitaient dans une résidence. Bien qu'on pût voir à l'examen qu'elles avaient eu des maladies dentaires et que celles-ci avaient été bien traitées, il apparaissait clairement que si elles avaient besoin d'autres

traitements, c'était parce qu'elles étaient moins capables de voir à leur hygiène personnelle et de se payer des services professionnels. Aussi cette étude renforce-t-elle l'idée qu'il importe grandement, surtout pour les groupes âgés, d'élaborer des stratégies de prévention et d'éducation tout en leur assurant l'accès au traitement dont ils peuvent avoir besoin.

Introduction

By 2006, Canada's seniors are expected to account for 25 per cent of the population, up from 9.7 per cent in 1981.¹ As a result of an increased life expectancy and predicted retention of teeth, dental disease and treatment needs will continue to be a problem for the elderly and the dental profession.^{2,3} Faced with a decline in dental diseases among the younger age groups, and the aging of the overall population, dentistry must now redirect its energies toward meeting the needs of the elderly. It has been suggested that advances in geriatric dentistry have been hampered by the profession's acceptance of the traditional view, which equates age with disease, deterioration and a progressive decline in health.⁴ This notion has been further reinforced by the nature of dental practice, which has historically remained more oriented toward the treatment of dis-

ease rather than prevention. Fortunately, the health professions have now recognized and accepted the fact that aging and disease are indeed different, and that quality of life standards for the elderly can be maintained through health promotion and the implementation of appropriate self-care strategies.^{5,6}

It is difficult to estimate the future oral disease status and treatment needs of the next generation of elderly – who will have received preventive and curative dental services for most of their lives – from epidemiological studies of the data obtained from today's elderly population.

An opportunity to examine a group of elderly who had received dental care throughout their lives presented itself when Mount Saint Vincent Motherhouse and the dental faculty of Dalhousie University expressed interest in collaborating on a program in geriatric dentistry. The purpose of this study is to describe the prevalence of edentulousness, tooth loss, periodontal disease, coronal and root caries, and the prosthodontic treatment needs of an elderly group of religious sisters who have had their dental care expenses covered for most of their adult lives. An additional objective of the program was to assess the treatment needs of the elderly to determine if it would be feasible to set up a geriatric experience for dental students.



TABLE I

Coronal Caries Criteria

	Incipient	Cavitated	Arrested
Pit/fissure	Catch with No. 23 explorer with softness of enamel adjacent to catch and no visual frank cavitation.	Visible breakdown of the walls of the fissure or a shadow or opacity beneath the enamel.	Dark fissures or pits which are hard on probing and with no visible loss of enamel.
Smooth and/or freely observable surfaces	White/opaque or brownish/dark in color opacity including slight loss of tissue but without gross cavitation; the surface is rough or softened and dull.	Visible breakdown of the enamel with cavitation or shadows or opacity beneath the enamel or beneath the marginal ridge in the case of posterior teeth.	White/opaque or brownish lesion in enamel only, including slight loss of enamel; the surface appears smooth, hard, and glossy.
Contacting proximal surfaces	For anterior teeth, transillumination showing a characteristic shadow loss of translucency. For posterior teeth, recording of darkened enamel lesions catching on probing, but no evidence of cavitation reaching into the dentin.	Visible breakdown of the enamel with cavitation or shadows or opacity beneath the marginal ridge in the case of posterior teeth.	Clinically visible, brown lesions where no obvious cavity can be probed.

Method

The Mount Saint Vincent Motherhouse in Halifax, Nova Scotia, is a retirement home for elderly members of the Sisters of Charity religious order from Canada and the United States. The motherhouse consists of a retirement residence for the ambulatory and a health care centre for medically compromised members of the order. All residents of the motherhouse (n=164) were invited to participate in this study and 144 accepted.

Following examiner training sessions, two dentists measured the oral hygiene status of the residents, and assessed the prevalence of periodontal disease, coronal and root caries, as well as prosthetic status. The National Institute of Dental Research (NIDR) criteria for the 1987 Adult Survey were used to measure oral hygiene status and loss of attachment, while the criteria used to estimate both coronal and root caries as well as prosthodontic treatment needs were formed by an expert panel of oral epidemiologists which was planning a national oral health survey in Canada in the 1990s (under the auspices of the Canadian Dental Association). This study represents the first pilot testing of these criteria.

Prior to examination, all participants were required to complete a medical history form. Inter-examiner reliability was checked for caries and pocket depth in just five patients because of the physical

and medical limitations of the study population. Kappa coefficient for pocket depth measurement within 1.0 mm was 0.52, indicating good agreement. Similarly, inter-examiner agreement coefficients for coronal and root caries indicated very good agreement. However, over 95 per cent of tooth surfaces diagnosed were either sound or filled and therefore no conclusion about the inter-examiner reliability on the other categories can be made.

Evaluation Criteria

Oral Hygiene Status

The NIDR criteria (1987) were used to assess the residents' oral hygiene status and the prevalence of periodontal disease. Plaque was measured on the mesial, buccal, distal and lingual one-thirds of each of the teeth present, excluding third molars. The presence of calculus was measured by inspecting for subgingival and supragingival calculus using a (GC-12) periodontal probe inserted into the crevice or pocket, and moved around the area prior to assessing the presence of supragingival calculus. The presence of subgingival calculus was scored higher with or without the presence of supragingival calculus (NIDR, 1987). Gingival bleeding was measured by running the GC-12 probe in the crevice for all teeth in a quadrant and observing for the presence or absence of bleeding on the buccal and lingual sides. To determine

periodontal probing depths and loss of attachment, a GC-12 periodontal probe, color coded and graduated at 2.0 mm intervals, was used. Probing measurements were made at the mesio-buccal, mid-buccal and disto-buccal sites, and each measurement was rounded to the lowest whole millimetre. At each of the sites, the distance from the free gingival margin (FGM) to the base of the pocket crevice and the FGM to the cemento-enamel junction (CEJ) were recorded in millimetres.

Caries

Coronal and root caries were diagnosed separately. For each condition, lesions were classified into incipient, cavitated or arrested. A modified DMFS index was used for coronal caries on all tooth surfaces (Table I).

Root Caries

Root caries were assessed for facial, mesial, distal and lingual surfaces. All areas of a tooth surface were examined including restored areas. Root caries was considered to be present if it involved the root and was not an extension of a coronal lesion. Restored root surfaces were categorized into restored with and without recurrent caries. Root caries was diagnosed as follows:

Incipient: An irregular, softened area with a leathery or a tacky feel upon probing, but no cavitation was present.

Frank cavitation: Soft in texture, with a break in the normal surface

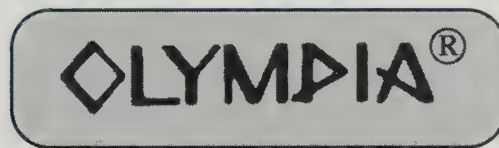
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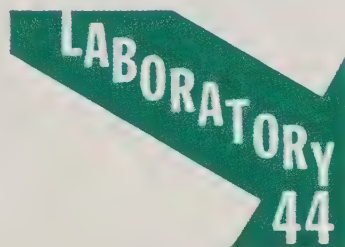
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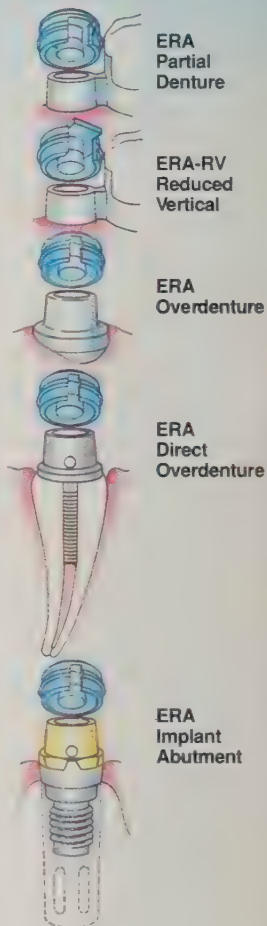
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TABLE II

Prevalence Of Total Tooth Loss In the Respondents

Fully edentulous	44 (30.6%)
Dentate	77 (53.5%)
Undetermined Status*	23 (15.9%)
Total	144 (100%)

*Due to medical status or scheduling conflict

TABLE III

Reported Use of Potentially Xerostomic Drugs

Type of Drugs	%
Anticholinergics	1.7
Antihypertensives	40.0
Antipsychotics	21.7
Diuretics	33.3

75% of residents reported using at least one xerostomic drug.

TABLE IV

Oral Hygiene Status

Plaque			Calculus		
Total examined	42	(100%)	Total examined	40	(100%)
With Plaque	42	(100%)	With Supragingival	33	(82.5%)
≥3 Teeth With Plaque	40	(95.2%)	With Subgingival	32	(80%)
All Teeth with plaque	19	(45.3%)	All Teeth with Calculus	7	(17.5%)
$\bar{x}$ of Teeth with Plaque	12.4	(5.4)	$\bar{x}$ of Teeth with Supragingiva	14.0	(3.2)
			$\bar{x}$ of Teeth with Subgingival	4.9	(4.5)

TABLE V

Mean Number Of Tooth Sites by Degree Of Loss Of Periodontal Attachment (LPA) and Pockets

	0-3	4-6	7+
LPA	33.6 (21.9)	13.1 (8.8)	0.9 (1.6)

Prosthetic Status

The prosthetic status of the residents was assessed using the criteria developed by the National Dental Epidemiology Project, Canada, and the number of residents with dental prostheses and the distribution of appliance types were identified.

For each appliance, the examiners evaluated the fit, retention, stability and occlusion of the prosthesis, as well as determining prosthetic treatment needs. Information was collected on the resident's prosthetic satisfaction and their desire for replacement.

Results

The mean age of the participants was 77.6 years. Of these, 44 were fully edentulous, 77 were dentate, and no information could be obtained from 23 due to their medical status or scheduling conflicts (Table II).

The mean number of missing teeth in the 77 dentate residents was 16.7 (10.0). The medical histories provided an invaluable picture of the complexity of the prescription drugs used by this elderly group (Table III).

Due to the participants existing medical history, only 40 residents were examined periodontally. The recorded oral hygiene status of the residents is found in Table IV.

Of those residents examined periodontally, 76.4 per cent had gingivitis and the mean number of teeth with gingivitis was 4.3 (4.2). Thirty-nine out of 40 residents had at least one site with loss of attachment 4.0 mm and 16 had at least one pocket depth 4.0 mm. The mean number of tooth sites by degree of loss of attachment and pocket depth is found in Table V.

Of the 60 dentate residents examined, 59 (98.3 per cent) had at least one surface of coronal caries. The mean number of sound, decayed, and filled tooth surfaces by coronal caries status is found in Table VI.

Fifty-six dentate residents (93.3 per cent) had at least one decayed or filled root surfaces. The mean number of sound root surfaces was 55.3. The mean number of incipient carious lesions was 0.5 and of cavitated lesions was 0.7. The

contour even prior to probing with a dental explorer.

Arrested root caries: Recorded when the explorer did not penetrate the lesion and there was no resistance to removal or the area was hard and had a smooth pol-

ished appearance even if some surface irregularity or pigmentation was present.

Secondary Caries: Caries at the margin of a restoration with softening of the interface of restoration and tooth surface.

TABLE VI

Mean Number Of Sound, Decayed and Filled Tooth Surfaces by Coronal Caries Status

	Mean	Median	SD
Sound	47.2	46.5	25.1
Incipient caries	0.05	0.0	0.2
Cavitated caries	0.3	0.0	1.5
Arrested caries	0.6	0.0	1.3
Filled with no decay	18.8	16.0	14.7
Filled with recurrent decay	0.5	0.0	1.2
DFS	20.3	18.5	15.0
Missing	16.7	18.0	10.0

TABLE VII

Mean Number Of Sound, Decayed and Filled Root Surfaces

	Mean	Median	SD
Sound	55.3	58.0	29.0
Incipient caries	0.5	0.0	1.0
Cavitated caries	0.7	0.0	1.9
Arrested caries	0.1	0.0	0.3
Filled with no decay	4.1	3.0	3.7
Filled with recurrent decay	0.3	0.0	0.8
DFS	5.7	4.0	4.4
Missing teeth	16.7	18.0	10.0

TABLE VIII

Mean Number Decayed and Filled Root Surfaces (DFS) by Type Of Tooth and Tooth Surfaces Affected

Tooth	M	B	D	L	Tooth
Molars	0.14	0.72	0.08	0.38	1.32
Premolars	0.10	1.82	0.25	0.18	2.35
Anterior	0.17	1.33	0.22	0.17	1.89

mean number of filled root surfaces without recurrent caries was 4.1 (Table VII), representing about 73 per cent of the total DFS score.

Table VIII presents the intraoral distribution of decayed and filled root surface by type of tooth and

surface affected. In the group examined, premolars were more likely to be affected than molars. Anterior teeth also were more affected than molars. In all teeth, the buccal surfaces were more affected than the mesial, distal or lingual

surfaces.

Of the 117 residents examined, 96 indicated that they had at least one prosthetic appliance while 92 reported that they wore at least one appliance. The distribution of prosthetic type of the 92 participants who wear appliances is shown in Table IX.

Fifty-five per cent of all prostheses were non-retentive, 20 per cent needed replacement and 17 per cent required repairs or minor adjustments. While 80 per cent of residents expressed satisfaction with their dentures, the remainder expressed a desire for a new prosthesis.

Discussion

When one considers the nature and philosophy of the dental care provided to today's elderly through their lifetime, it is realistic to suggest that the next cohort of elderly will show a marked decrease in edentulism. Although the rate of edentulism noted in this study is consistent with reports^{7,8} of declining edentulism, the findings are as much dependent on socioeconomic, cultural and educational variables as they are on the presence or absence of oral diseases.⁹ While numerous studies allude to developing trends that suggest the next generation of elderly will enjoy improved oral health,^{6,9-11} research will certainly be needed to confirm these findings. Although the Sisters of Charity study was not an epidemiological survey *per se*, but an evaluation of the oral health status and treatment needs of residents of one institution, it may indeed provide a unique glimpse of the oral health status and treatment needs of future elderly.

The diverse range of medications used by today's elderly has become an issue of both social and medical concern. It has been estimated that two-thirds of all Americans over the age of 65 take at least one prescription drug.¹² More than 400 drugs have been identified as potentially reducing salivary flow, which suggests that xerostomia or hyposalivation is increasingly prevalent in the elderly.¹³ The finding that 75 per cent of the residents reported using at least one xerostomic drug clearly supports the no-

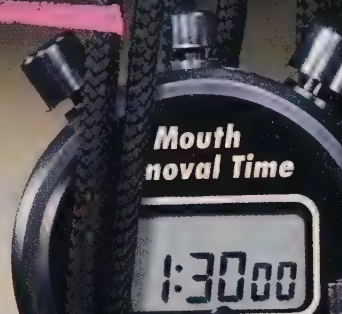
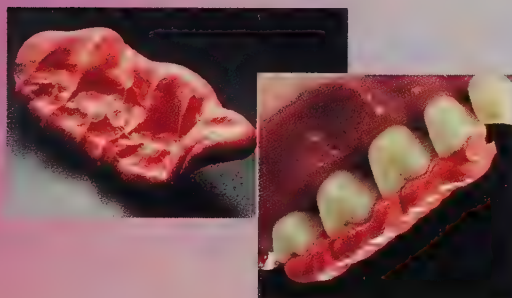
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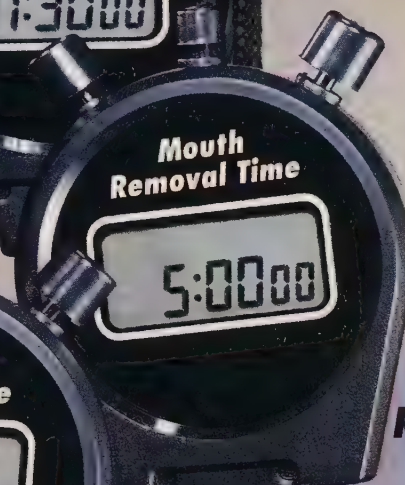


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TABLE IX

Prosthetic Type Of 92 Residents Who Wear Appliance

	Number of Individuals	Percentage
Complete Maxillae	15	16.3
Complete Mandible	0	0.0
Complete Maxilla and Mandible	35	38.0
Partial Maxillae	14	15.2
Partial Maxillae and Mandible	8	8.7
Complete Maxillae, Partial Mandible	15	16.3
Complete Mandible, Partial Maxillae	2	2.2
Total	92	100.0

tion that clinicians must be cognizant of the potential disease implications of these drugs and develop individualized treatment strategies to manage the needs of the elderly patient.

Although the prevalence of periodontal disease increases with age, it is not at all certain that the severity of the disease increases in older adults.^{14,15} The primary variable in the periodontal disease equation appears to be oral hygiene, not age.¹⁶ At the time of examination of the sisters, despite the high prevalence of plaque, calculus, gingivitis and loss of attachment, only 40 per cent had at least one periodontal pocket 4.0 mm.

While the results cannot predict the status of the next cohorts of elderly, who will retain increasing numbers of teeth, it appears that the dental experience of the sisters helped decrease the risk factors to dental disease, enabling them to retain a relatively high number of teeth. The periodontal status found in this investigation is comparable to the 1986 NIDR¹⁷ report, which suggests that, in the well maintained elderly, the need for advanced periodontal treatment is low and preventive maintenance is required.

Although dental caries has been investigated extensively in children, limited information is available concerning the prevalence of coronal caries in the elderly. If, however, coronal caries activity was calculated as a percentage of

teeth present instead of the number of lesions per person, the elderly would have the highest prevalence rate of caries among all adult age groups.¹⁸

Despite a significant decrease in the prevalence of caries in children over the past two decades, epidemiological studies^{5,9,10,19} have predicted that a combination of extended longevity and increased retention of teeth could lead to gradual increases in the caries experience in successive generations of older adults. A comparison of dentate persons in the United States between 1960-62 and 1971-74 showed a modest increase in the mean number of decayed (D) and filled (F) teeth in 65- to 74-year-old females. This increase, however, is not believed to represent an increase in caries as much as the presence of greater numbers of teeth and an increased utilization of treatment services.¹⁹ The results of this study are consistent with reports of older adults attending seniors' centres, who had an average of 20 decayed or filled coronal tooth surfaces, with about 92 per cent of these surfaces being filled. While comparisons between studies are difficult due to differences in the criteria and subjects investigated, the finding of at least one decayed tooth per dentate elderly is consistent among authors.^{9,19,20}

The increased retention of heavily restored teeth, which often require replacement, will make predictions of treatment needs dif-

ficult. Furthermore, the elderly's reduced ability to maintain satisfactory plaque control coupled with the deterioration of their restorations over time may predispose these teeth to the development of secondary caries. Primary caries, on the other hand, may be expected to decline in prevalence as most susceptible tooth surfaces will have already been filled.

Recent studies identify root caries as the greatest caries problem in the elderly.^{21,22} The etiology of root caries is considered complex and the literature suggests a predisposition in the elderly as a result of poor oral hygiene, a high carbohydrate diet, loss of periodontal attachment, high prevalence of prosthetic appliances, and reduced salivation and muscle activity.^{6,23}

Reports of root caries in elderly dentate Canadians estimated that 46-83 per cent had at least one decayed or filled root surface.^{17,24} The investigation shows similarities with previous studies in prevalence of root caries and the relative value of the decayed portion of DFS scores.¹⁹ However, the number of filled root surfaces was greater in this study than in comparative reports.^{6,17} This finding may not reflect higher caries levels in the participants, but rather higher levels of treatment in this group and the lack of accepted decision-making criteria concerning treatment.

Although the rates of edentulism may be declining, the prevalence of denture-related problems and prosthodontic treatment needs in the elderly remains relatively high.²⁵ Of particular interest are the suggestions of a discrepancy between the dentist's and patient's assessment of denture quality and subsequent treatment needs.²⁶ Unfortunately, this trend seems to be present in this study. Analysis of the residents prosthetic status revealed that the majority expressed satisfaction with their dentures and relatively few indicated a desire for a new prosthesis. Evaluation of the prosthesis by the investigators, however, indicated problems associated with stability, retention and occlusion. Clearly, there is a need for prosthetic evaluation criteria that can accurately estimate the pa-

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tient's needs, as opposed to the perceptions of the dental profession concerning population needs.

It has been suggested that the dental disease found in today's elderly is attributable to inadequate and/or infrequent dental care during their lifetime.¹² Although the sisters received preventive and curative dental treatment for most of their adult lives, these services became less accessible in retirement due to their increased inability or reluctance to leave the residence. Evidence of current treatment needs is considered to be a reflection of their decreasing ability to manage their personal home care and the reduction in preventive, educational and treatment services available to them.

Based on the treatment needs identified in this study, a treatment clinic has been established at the MSV Motherhouse in co-operation with Dalhousie University, faculty of dentistry.

Dr. MacInnis is acting dean at the faculty of dentistry, Dalhousie University, Halifax, Nova Scotia.

Dr. Ismail is the chair of the department of Pediatric and Community Dentistry of Dalhousie University.

Dr. MacDonald is the chair of the department of restorative dentistry at Dalhousie University.

Reprint requests to **Dr. William A. MacInnis**, Acting Dean, Faculty of Dentistry, Dalhousie University, 5981 University Ave., Halifax, Nova Scotia, B3H 3J5.

References

1. Population projections for Canada. Provinces and territories 1984-2006. Statistics Canada Catalogue page 520, 1991.
2. DiAngelis, A.J. and Smith, B.J. Training tomorrow's leaders in oral health services for older adults. *Gerodontology* 1:59-62, 1985.
3. Mersel, A., Call, R. and Mann, J. Demographic trends of aging — application to gerodontology. *Gerodontology* 6:9-15, 1987.
4. Blau, Z.S. Socioeconomic variations in dental status and behavior of today's elderly. *Spec Care Dent* 2:244-247, 1982.
5. Baum, B.J. Research on aging and oral health: An assessment of current status and future needs. *Spec Care Dent* 1:156-165, 1981.

6. Gift, H.C. Issues of aging and oral health promotion. *Gerodontology* 4:194-206, 1988.
7. Weintraub, J.A. and Burt, B.A. Oral health status in the U.S.: Tooth loss and edentulism. *J Dent Educ* 49:368-376, 1985.
8. Leake, J.L. A review of regional studies on the dental health of older Canadians. *Gerodontology* 7:11-19, 1988.
9. Hamilton, M.E. Oral health status of the elderly in northern economics. *Can J Comm Dent* 2:27-49, 1987.
10. Beck, J.D. The epidemiology of dental diseases in the elderly. *Gerodontology* 3:5-15, 1984.
11. Douglass, C.W. and Gammon, M.D. Implications of oral disease trends for the treatment needs of older adults. *Gerodontology* 1:51-58, 1985.
12. Papas, A.S., Niessen, L.C. and Chauncey, H.H. Geriatric Dentistry — Aging and Oral Health. St. Louis, Mosby, 1991.
13. Sreebny, L.M. and Schwartz, S.S. A reference guide to drugs and dry mouth. *Gerodontology* 5:75-99, 1986.
14. Page, R.C. Periodontal diseases in the elderly: A critical evaluation of current information. *Gerodontology* 3:63-70, 1984.
15. Hunt, R.J., Levy, S.M. and Beck, J.D. The prevalence of periodontal attachment loss in an Iowa population aged 70 and older. *J Pub Health Dent* 50:251-256, 1990.
16. Lindhe, J., Socransky, S.S., Nyman, S. et al. Effect of age on healing following periodontal therapy. *J Clin*

- Periodont* 12:744-787, 1985.
17. Oral Health of United States Adults. The national survey of oral health in U.S. employed adults and seniors, 1985-1986. Bethesda, MD. USDHHS. NIH Publication 87-2868, 1987.
18. Chauncey, H.H. et al. The incidence of coronal caries in normal aging male adults. *J Dent Res* (Spec Issue) 57:148 Abstract no. 296, 1978.
19. Banting, D.W. Dental caries in the elderly. *Gerodontology* 3:55-61, 1984.
20. Locke, R.P., Leake, J.L., Hamilton, M. et al. The oral health status of older adults in four Ontario communities. *J Can Dent Assoc* 51:727-732, 1991.
21. Wallace, M.C., Retief, D.H. and Bradley, E.L. Prevalence of root caries in a population of older adults. *Gerodontology* 4:84-89, 1988.
22. Bowen, W.H. Dental caries: Is it an extinct disease? *JADA* 122:49-52, 1991.
23. Kitamura, M., Kiyak, H.A. and Muligan, K. Predictors of root caries in the elderly. *Comm Dent Oral Epidemiol* 14:34-38, 1986.
24. Banting, D.W. Epidemiology of root caries. *Gerodontology* 5:5-11, 1986.
25. Hunt, R.J., Srisilapanan, P. and Beck, J.D. Denture-related problems and prosthodontic treatment needs in the elderly. *Gerodontology* 1:226-230, 1985.
26. Thomas-Weintraub, A. Dental needs and dental service use patterns of an elderly edentulous population. *J Prost Dent* 54:526-532, 1985.

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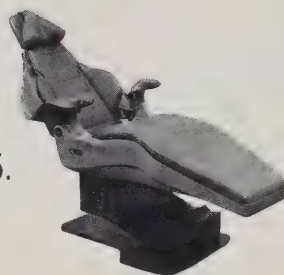
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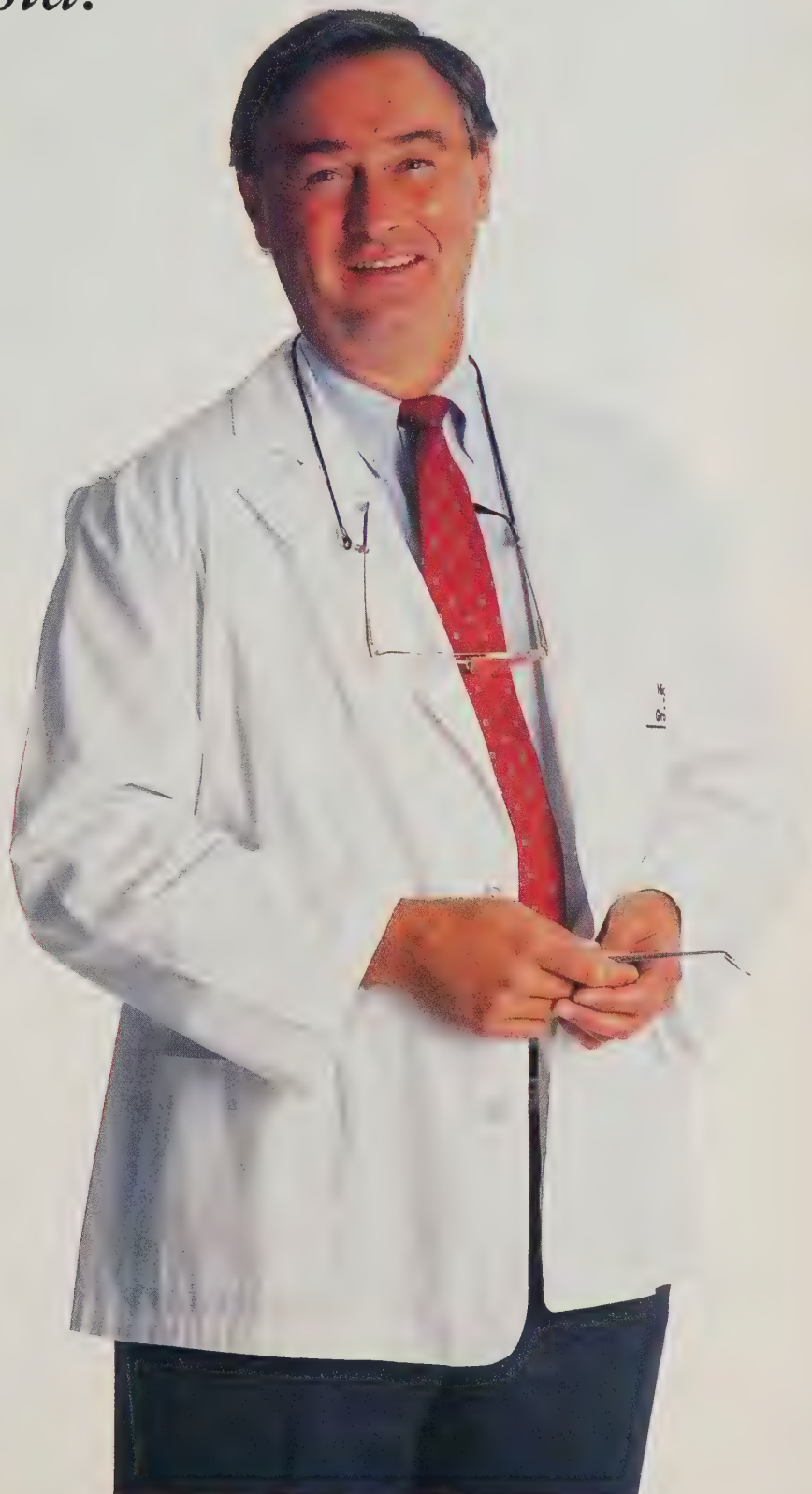
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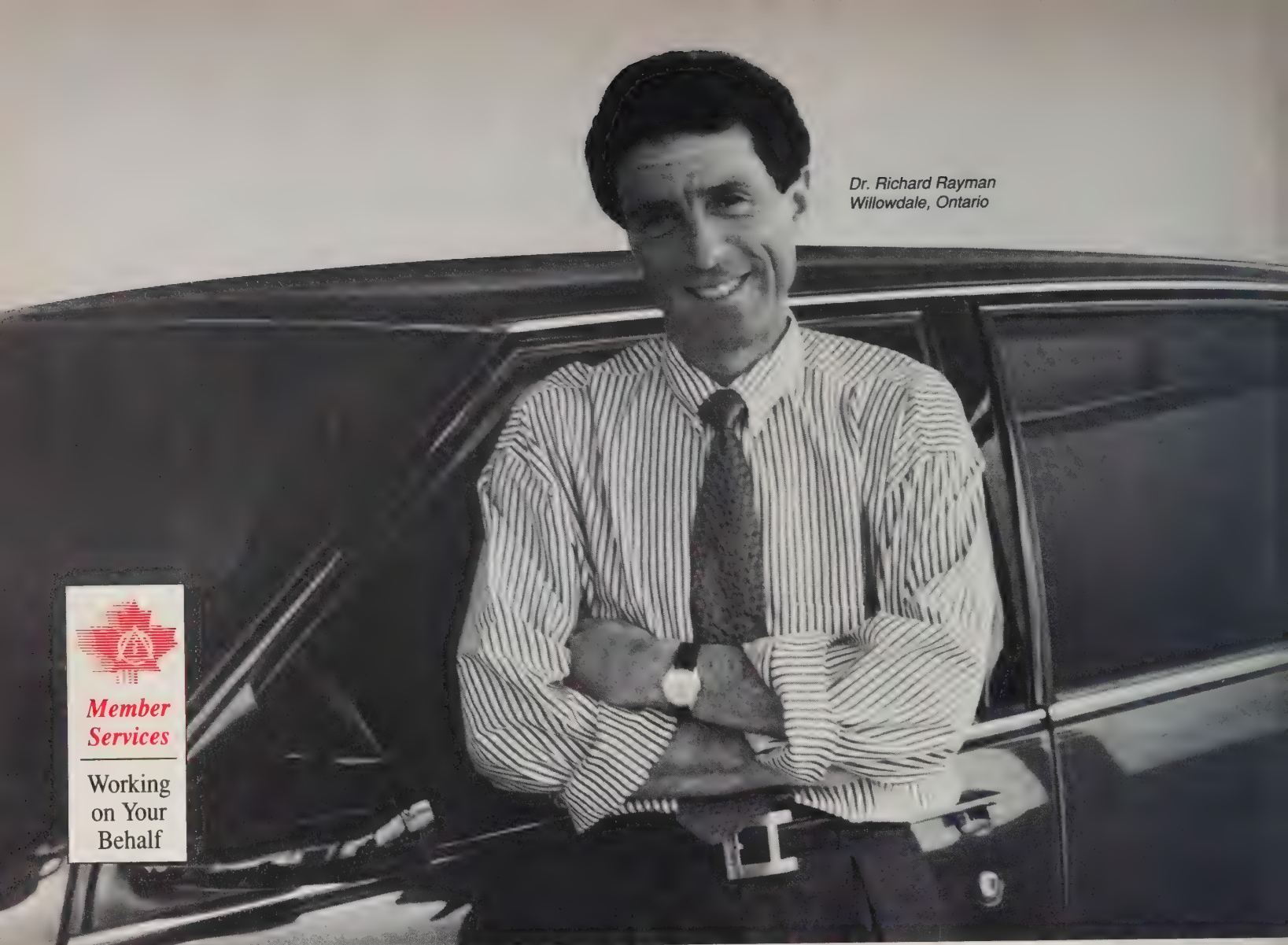
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- Christensen, G.J. "The cracked tooth syndrome: a pragmatic treatment approach." *JADA* Feb. 1993 : pp. 107-8.
- Ehrman, E.H. and Tyas, M.J. "Cracked tooth syndrome: diagnosis, treatment and correlation between symptoms and post-extraction findings." *Aust Dent J* Apr. 1990 : pp. 105-12.
- Guthrie, R.C. and DiFiore, P.M. "Treating the cracked tooth with a full crown." *JADA* Sept. 1991 : pp. 71-3.
- Chong, B.S. "Bilateral cracked teeth: a case report." *Int Endod J* July 1989 : pp. 193-6.
- Agar, J.R. and Weller, R.N. "Occlusal adjustment for initial treatment and prevention of the cracked tooth syndrome." *J Prosthet Dent* Aug. 1988 : pp. 145-7.
- Balevi, B. "Cracked tooth syndrome." *Univ Toronto Dent Journ* Fall 1987 : pp. 7-9.
- Trushkowsky, R. "Restoration of cracked tooth with a bonded amalgam." *Quint Int* May 1991 : pp. 397-400.

To order the complete package on **CRACKED TOOTH SYNDROME**, just call 1-800-267-6354, extension 223, or ask for the library!

Acquisitions

Each month, the library receives a number of new books. Members can borrow these books for \$5 each, plus tax. This charge includes return postage.

- Temporomandibular Disorders. Charles McNeill [editor] : Quintessence Pub., 1993, 141 pages.

This book represents the recommendations of the American Acad-

emy of Orofacial Pain (AAOP) for the classification, assessment and management of temporomandibular disorders (TMD).

- Computers in Clinical Dentistry. Proceedings of the First International Conference. Houston, Texas, September 1991. Jack Preston [editor].
- Modern Practice in Orthognathic and Reconstructive Surgery. 3 volumes. William H. Bell [editor] : Saunders, 1992.

Volume 1 of this three volume set is divided into 27 chapters, which address treatment planning, enhancing facial esthetics, and the treatment of temporomandibular joint dysfunction. The second volume addresses reconstructive surgery, functional restoration of the dental occlusion and associated structures with implants (with special emphasis on dental implants), and the functional restoration of occlusion. The third volume discusses osteotomies and orthognathic surgery. There are 118 contributors to these volumes, and each volume is available for loan either separately or as a set.

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JOURNAL

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IT'S MY OPINION

Dental Education and Board Examinations In The U.S.



In theory, national and regional board examinations test candidates for dental licensure on their ability to meet minimum educational and professional performance standards.

When board examinations were developed in the United States in the late 19th and early 20th centuries, most dentists learned their "trade" from other dentists or proprietary institutions, and most entered practice with no basis in either the scientific method or academic discipline. The need to certify educational standards in dentistry was obvious.

Initially, licensure examinations were developed on a state by state basis. Recently, many of these state-run examinations were coalesced and brought under the jurisdiction of regional boards, such as the Northeastern, Southeastern, and Mid-western. The National Board of Dental Examiners (NBDE) offers a standardized, scientifically-

based examination composed of basic science and clinical written tests, but not the clinical practicum that the state or regional boards require.

State, regional and national examinations intrude heavily into the educational process, as they require significant student preparation, faculty participation, curriculum accommodations and, of course, expenditure. This occurs even though these examinations are unlikely to identify and weed out the unqualified or incompetent practitioner. While the written NBDE examination may require students to have a basic understanding of science, most dental curricula already provide this information in excess of the examination requirements. Moreover, routine accreditation reviews should be enough to correct any serious deficiencies in academic programs.

Virtually all dentists graduating from U.S. dental schools pass a state or regional board examination, and the vast majority do so on their first try. Obviously, the examination process does little or nothing to weed out less competent individuals. Indeed, my personal observations have revealed no obvious pattern of success or failure that is consistent with the academic records of U.S. dental school graduates, their schools of origin or the quality of their graduate work. Weak candidates often pass their licensure examinations on the first try, while honors graduates sometimes require two or three attempts because of patient failure or other circumstances beyond their control.

As the system has evolved in the United States, board examiners are frequently appointed by the state governor based on the recommendations of the state dental society and, possibly, the individual's political affiliation. In some states, a "quiet" political campaign occurs in support of one individual or another. The system produces somewhat variable results. Many examiners are honest, forthright, intelli-

gent, and highly-qualified practitioners. Some are not.

Regardless of how they were selected, many examiners have very little training or experience in education, particularly with regard to the appropriate method of conducting an unbiased evaluation of examination candidates. Many are older dentists, and, as such, are often not current on recent changes in professional practice. They sometimes espouse techniques or philosophies of treatment that are at variance with good public health practices. Until recently, for example, many candidates were tested on their ability to complete a gold foil restoration, even though few dentists still consider this procedure to be an appropriate restorative technique, and many schools no longer teach it. At the same time, periodontal evaluation and treatment, endodontics, and prevention have only very recently found their way into board examinations, even though they are major curricular and public health concerns to the profession.

Most board examinations were and still are, to a major degree, a restorative and prosthetic trial primarily because the board examiners are most familiar with that type of practice. Even so, many flaws and inconsistencies still exist. One examiner may pass a candidate with a favorable comment while another may rank his or her work as "the worst I've ever seen." Even though there have been serious attempts to improve examiner reliability through special training and calibration (Northeast Regional Boards), in the end, when all is said and done, clinical boards revisit, in a superficial and unpredictable way, skills and knowledge that all Canadian and U.S. dental schools already teach (and examine) in a far more comprehensive manner.

Clinical board examinations are also often biased in favor of the local graduate. If, for example, the local dental school (often the alma mater of the examiner) used certain products in the wax-up process, or unique instrumentation, it is obvi-



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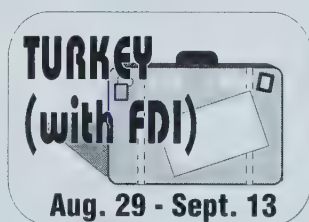
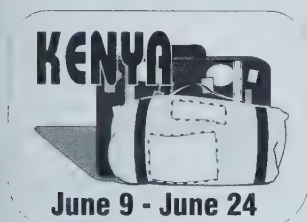
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ous to the examiners who the local candidates are, even when an attempt is made to blind the grading process.

Another area of contention (which has led to a growing number of legal challenges) is the requirement for specialists (oral surgeons, oral pathologists, periodontists, etc.) to pass a general dental board examination that has little or nothing to do with their specialty. Despite having spent several years in training, as well as perhaps fulfilling a military obligation, these individuals will be required to pass an examination having little to do with their specialty practice. To pass the board, many of them – generally with the help of friends or a future associate – must “practice” restorative or prosthetic skills on a unsuspecting volunteer. After licensure, these candidates are unlikely to ever use these procedures again, nor should they! One must then ask, for what purpose is such an individual examined?

Many of my colleagues in the United States believe that the boards are a hurdle and, in certain locations, deliberately designed to be very difficult to pass. They feel that board exams are sometimes used to limit practitioner migration or relocation (e.g. by creating an economic disincentive).

I remember one of my fellow students telling me about his state board examinations. Prior to the examination date in a popular resort state, he was contacted by a dental supply salesman who claimed to have received information from a board member on which candidates would be likely to pass and which ones were destined to fail. As bizarre as this event seems, analogous circumstances have cropped up too frequently to be ignored. It's obvious that the manipulation of board examinations for political or economic motives was and still is very frequent, which is probably an indication of a fundamental perceptual problem with the board examination system.

Organized medicine in the United States has long since abandoned the “practical board exam.” Instead, the medical profession re-

lies on a variety of alternative standardized national qualifying exams, with written science and clinical problem questions. Once qualified, a physician may be licensed in another state simply by presenting his or her credentials and current recommendations, as well as hospital and malpractice claim records, etc.

I have already alluded to the intrusion of such “boards” into the academic process. In my alma mater, much time and effort was diverted to conducting “mock boards,” where patients were treated under board-like conditions. It was common practice to select the restorative procedure needed for the board examination rather than developing a treatment plan for comprehensive care. In addition, review sessions were held (after hours or sometimes even during class) to discuss old exams and teach students how to pass the board exams. It even got to the point where students were briefed on the expected “standard answers,” which could be at variance with new scientific data or practice. Most state boards were held at dental schools, both in the off season and during the school year. In the latter case, student access to the clinic was often restricted for up to one week. It was also common, particularly in states without dental schools, for patients to be treated in hotel lobbies and school auditoriums – surely not an ideal treatment or examining environment.

As a further distortion of the examining process, I have personally been present when a faculty member “monitoring” a national board exam tacitly allowed students from our institution to swap answers and discuss choices. While semi-organized cheating such as this is probably very rare, the competition between schools for high pass rates is not. This issue is routinely discussed in many schools, and often used as the basis for intellectual chauvinism.

The basic aim of our dental schools is to produce well-trained, thoughtful, and ethical dentists, not Olympic exam takers. While there must be examinations and other methods to validate a student's

clinical performance and his or her standard of knowledge, an examination system that fundamentally tests the wrong things or has organizational deficiencies is not helpful.

Generally speaking, the most likely (and unspoken) reason for establishing a board system is economic. In plain words, the exams make it possible to restrict the number of “excess” dentists. But various other alternatives exist to control the supply problem (where legitimate).

The current accreditation and licensing system in Canada is the envy of many educators and practitioners in the United States. Indeed, there is an active interest in evolving the U.S. system into a Canadian-style licensure program. With this in mind, surely we should preserve what we have and not regress to a system that has shown itself to be expensive, intrusive, often unfair, and largely ineffective. ■

Dr. J.T. Jastak is a professor and the chair of the division of oral and maxillofacial surgery, faculty of dentistry, at the University of British Columbia.



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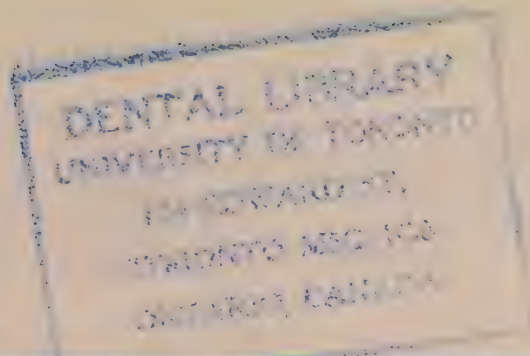
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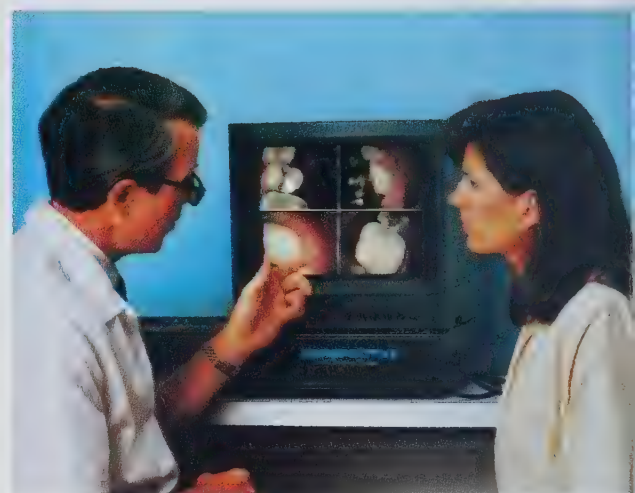
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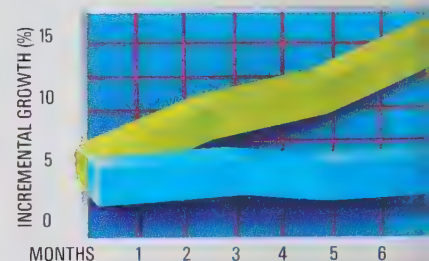
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CANADIENNE

June/Juin 1993
Vol. 59 No. 6

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The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.



June/
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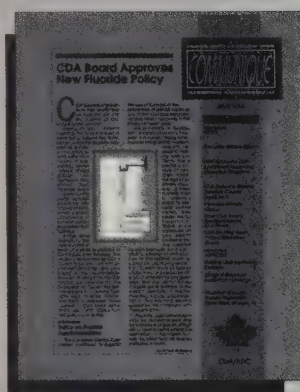
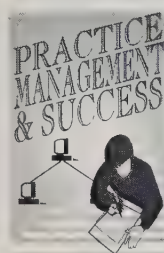
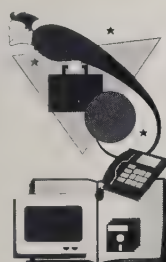
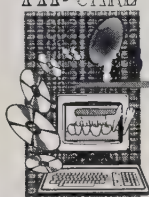
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SCIENTIFIC



HI-TECH
HI-CARE



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Cover: Victoria's Butchart Gardens
(Photograph Courtesy of Walter Pelech . See story on page 504).

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JADA Volume 122, August 1991

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EDITORIAL

FIDES, PIETAS, OBLIGATUS



Dr. P. Ralph Crawford,
Editor

A few weeks ago, I received a letter from a friend who teaches English in Japan. He commented on Japan's traditional school system and compared educational standards there to Canada's standards. In general, my friend thought that we Canadians fared quite well, but he was impressed by the emphasis the Japanese place on intangibles such as loyalty, love and respect.

My mind leapt back over 40 years, to a series of lectures I attended on Greek and Roman history. The lectures were conducted by Father Athol Murray, the founder of Wicox, Saskatchewan's, Notre Dame College. Pere, as we called him, had a way of making history come alive, and I can still picture him today, extolling on the magnificence of Pericles' Greece and the power of Caesar's Rome.

One of Pere's living lectures stressed that Rome only rose from Romulus's hut on Palatine Hill to the empire that spanned the world because its people recognized the integral meaning and value of three simple words – *fides*, *pietas* and *obligatus*. According to Pere

Murray, this recognition was the spark that enabled Rome to rise above mere mediocrity to become a force that would influence mankind for more than 20 centuries.

The Latin word *fides* referred to the trust, confidence, reliance and belief that Rome's citizens placed in their state and city. Not a blind, lemming-like faith, but a credence that Rome worked in the best interests of her people. *Pietas* referred to the duty and gratitude extended toward parents, country and benefactors – that virtue of being grateful for the blessings bestowed by others. *Obligatus* took the duty of *pietas* one step further, by implying an obligation to serve ones parents, country and beliefs. What has all this talk about Japan, Rome and intangibles got to do with dentistry? When Pere's concept that something of value could be built around a belief in the meaning of three simple words is taken one step further, and applied to the 'profession' of dentistry, the connection is obvious. Without all that is embodied by the word 'profession,' dentistry as we know it would cease to exist. We, as dentists, would be in the same position as Japanese students if they believed their teachers were spouting

meaningless rote or Roman citizens if they marched uncommitted and unbelieving into battle.

Today's art and science of dentistry was only made possible because legions of dedicated men and women believed that the profession involved more than treating a tooth in a socket or putting money in the bank. Innately, they chose those intangibles that contribute to the lasting greatness of civilizations, countries and people. Those who came before us knew that the dental profession – and all other professions – cannot exist without respect for quality of life.

Without duty and gratitude, we only become self-serving, which ultimately leads to life without meaning. Without a reliance on our codes of ethics and confidence in our associations, we exist alone, finding little comfort within our self-created vacuums.

"Remember this," said Marcus Aurelius, "There is a proper dignity and proportion to be observed in the performance of every act of life."

P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association

CDA Members...

See the June Communiqué for stories on:

- CDA's interim board meeting
- The egg-speriment program
- The alternate benefits program
- Tax implications for cottage owners
- Gingival enhancement/Root coverage
- Dentition of a late Roman population
- Latex sensitivity

And More

CDA's Communiqué is published exclusively for members of the
Canadian Dental Association

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1993
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No. 6

ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

October 2-8, 1994
Joint CDA/FDI
Annual Dental
Meeting
 Vancouver, BC
 (613) 523-1770,
 or 1-800-267-6354

July/Juillet 1993

July 1-3: British Dental Association Annual Conference being held at the Bournemouth Conference Centre, in Bournemouth, England. For details, contact: British Dental Association, conference office, 64 Wimpole St., London, England, W1M 8AL.

July 5-7: Bermuda Dental Association Annual Dental Convention being held in Paget, Bermuda. For more information, contact: Dr. Robert E. Gibbons, Erin, Southcourt Ave, Paget PG 06, Bermuda. Tel: (809) 236-4477, or fax: (809) 236-8380.

July 4-7: 84th Annual Conference, Sustaining Our Communities: Health for the Future, is being held at the Radisson Plaza Hotel, St. John's, Newfoundland by the Canadian Public Health Association. For more information, contact: Robert Burr, CPHA Director of Communications, 1565 Carling, Suite 400, Ottawa, Ontario, K1Z 8R1. Tel: (613) 725-3769.

August/Août 1993

August 22-27: 7th World Congress on Pain, sponsored by the International Association for the Study of Pain, is being held in Paris, France. For more information, contact: International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA, 98105. Tel: (206) 547-6409.

August 25-29: Canadian Academy of Endodontics 29th Annual Meeting being held at the Deerhurst Re-

sort, in Huntsville, Ontario. For details, contact: Dr. W.B. Wiseman at (705) 737-4700.

September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact: WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

September 21-23: Syrian Dental Association 4th Scientific Congress will be held in Damascus, Syria. For details, write: Dr. Rashid Jhara, President, Syrian Dental Association, Jisr Al Abiad, Str, Egypt No. 52 PO Box (11104), Damascus, Syria.

October/Octobre 1993

October 1-3: Canadian Association of Dental Consultants Annual Workshop will be held at the Sheraton Halifax in Halifax, Nova Scotia. For more information, contact: Dr. William O. Adams, PO Box 2200, Halifax, Nova Scotia, B3J 3C6. Tel: (902) 468-9700, ext. 194.

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

October 15-16: 1993 CFDE/CDA Teaching Conference on Hospital Dentistry being held at the University of Toronto, in Toronto. To register, contact: Ms. Gay MacQuarrie at (613) 523-1770 or write the CDA, 1815 Alta Vista Dr., Ottawa, Ontario, K1G 3Y6.

October 29-30: The Canadian Academy of Restorative Dentistry and Prosthodontics being held at the Halifax Sheraton Hotel in Halifax, Nova Scotia. For information or registration contact: Dr. Michael

Roda, 1545 Birmingham St., Halifax, Nova Scotia, B3J 2J6. Tel: (902) 422-5957, fax: (902) 492-4426.

November/Novembre 1993

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, being held in San Francisco, CA. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

November 8-10: Israeli Dental Association International Dental Conference being held at the Tel-Aviv fair grounds in Tel-Aviv, Israel. For more information, write: Dr. I. Chen, IDA Chairman, Israeli Dental Association, 49 Bar-Kochba St., Israel, Tel-Aviv 63427.

February/Février 1994

February 16-20: Jamaica Dental Association 30th National Dental Convention is being held at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

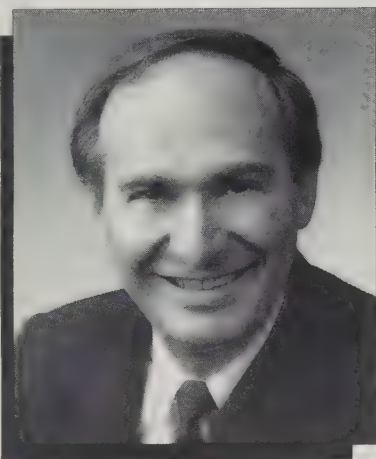
June/Juin 1994

June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) will be held at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046. La Habana, Cuba.

June 25-July 1: 10th Congress of the International Association of Dento-Maxillo-Facial Radiology to be held in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMFR, c/o Korea Convention Services Ltd. SL Youngdong PO Box 305, Seoul 135-603, Korea.

PRESIDENT'S COLUMN

THE GOOSE THAT LAYS THE GOLDEN EGG



Dr. Bernard Dolansky,
President

How many of you remember the story of "Jack and the Beanstalk"? It was one of my favorites as a child, possibly because it has all the elements of a superior fairy tale: suspense, good versus evil, a memorable line ("fee fie foe fum, I smell the blood of an Englishman") and that most necessary of ingredients – magic.

To me, one of the more memorable magical elements in the story was the goose that laid the golden eggs. It provided its owner with a guaranteed source of income in exchange for a reasonable investment in a suitable roost.

Well, dentistry has its own goose that lays golden eggs – dental benefits plans. Think about it. There are very few dentists who would have weathered the last recession without third party payments – but there is no magic involved in dental benefit plans.

Instead of sleights of hand, dental benefits involve a complex, multi-factorial system that includes

dentists, patients, claims processors, insurers, dental associations and licensing bodies, to name just a few of the players. They also involve a number of different perspectives, depending on who you're talking to, and the attitudes displayed by the different players shift on this basis. For instance, the insurers typically view our patients as actual or potential "plan subscribers" to the benefits industry, while dental associations usually think of patients in terms of the general public.

I would like to focus on two specific players in this system, dentists and dental associations. To the industry, dentists are "providers." On the other hand, our associations are sometimes looked on as "protective societies" that seek to help member dentists to maximize their "take" from the system.

Actually, this assessment is partly true. Dental associations have traditionally made sure that dentists get a *fair* shake from the dental benefit system, and they have been rather good in this role over the years. However, I emphasize the word *fair*. All we have done, really, is to use the strength of our numbers, united through CDA and the provincial bodies, to keep the industry from trying to dictate to the dental profession. In effect, our strength in numbers and organizational clout has allowed us to negotiate with the insurance carriers as equals.

Unfortunately, a small number of dentists have, over the years, abused the system. By their actions, they have threatened the security and reputation of the overwhelming majority of dentists, who are content to make sure that they and their patients get what they deserve from the system, no more and no less.

In simplest terms, these "cheaters" give the rest of us a bad name. They pad their claims, they claim for services not rendered, they shop the fee guides and creatively use codes. Some people rank these misdemeanors as either "soft abuse" or "hard abuse." Horse-

feathers. It's fraud, pure and simple. Dental associations in general and CDA in particular have no interest in protecting or condoning this practice. In fact, we encourage licensing bodies to do all they can to halt this type of behavior.

While some licensing bodies do an excellent job in this area, others give the impression that they are less than enthusiastic. This doesn't help anybody. Our profession should not continue to be harmed by the actions of a handful of questionable characters.

Consider these facts. When a dentist takes the position that insurance companies are rich, and asks what's a few bucks extra on a claim, they usually don't know what they are talking about. These dentists aren't stealing from the insurance companies. Most large plans are run on a capitalized administration, services-only basis, or are experience rated. In effect, the plan purchaser and the employees who pay the premiums actually foot the bill. They're the ones being hurt, not the insurers.

Today, given the present economic climate and cutbacks, businesses and industry are carefully scrutinizing and rethinking all expenses. The number of golden eggs is limited. In fact, one "not-for-profit" company is encouraging their plan purchasers to move to non-assignment plans, as they have found that claims are lower when the patient has to pay the dentist and then get reimbursed in turn. Another company won't accept assignment claims from 200 to 300 dentists that it has identified as being untrustworthy. What a terrible comment on one's professionalism.

I emphasize, once again, that this is an overwhelmingly honest, hard-working profession. CDA condemns those short-sighted few who are slowly choking the magic goose for all of us.

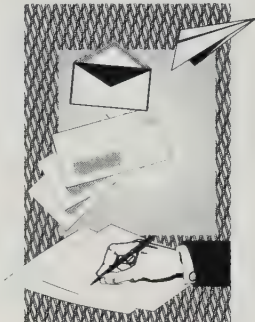
Bernard Dolansky, BA, DDS, MS
President of the Canadian Dental Association

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LETTERS

LETTERS



Toronto Star STARPHONE

I would like to correct some erroneous statements made concerning StarPhone ("CDA Withdraws Support for STARPHONE," News Update, *J Can Dent Assoc* 59(4):329, 1993), and my involvement with the CDA dental messages that appeared on the system.

In your article, the statement was made that the 15 second advertising spots associated with the CDA message were "sold" to myself. This is factually incorrect.

The truth of the matter is that StarPhone had ceased to use the information message when I independently approached them with the idea of providing callers with information on cosmetic dentistry. My agreement with StarPhone was to provide copy for four information pieces on this area alone, and to pay for the advertising costs associated with running these four spots.

Independent of my agreement with them, StarPhone reactivated the dental information messages they had been running previously from CDA. I have subsequently been made aware that my advertising also appeared following each CDA message. This was completely beyond my agreement with StarPhone and represented action taken without my approval or knowledge.

As a CDA member, I recognize the difficulty that this situation represented to the association. I was quite upset with the manner in which StarPhone acted and have

since cancelled my agreement with them.

However, I am at the same time disappointed that CDA chose not to contact me on this issue, simply as a matter of courtesy. By not taking the time to contact me directly, CDA and the *CDA Journal* have not only failed to give me the opportunity to offer my assistance on this issue, but have failed to give members an accurate reflection of the facts involved.

I would hope that in the future a situation involving a CDA member would be dealt with in a manner that includes that member. At a time when we need to encourage stronger membership in our national association, it is important that CDA be recognized as a fair and responsible organization for all who join.

Edward Phillips, DDS
Toronto, Ontario.

Wearing The Other Person's Shoes

The "President's Column" in the April 1993 issue (Dolansky, B. Wearing the Other Person's Shoes. President's Column, *J Can Dent Assoc* 59(4):327, 1993) rang a bell with me. I wrote to the *Journal* a couple of years ago suggesting that dentists should consider reducing their fees for prophylaxis. Dr. Dolansky goes one step further in pointing out that root canal therapy and a crown can run over \$1,000.

Surely, in these lean and mean '90s (to use Dr. Dolansky's words) some thought needs to be given by the profession on whether they are pricing themselves out of the reach of a large percentage of the population. Everyone is being asked to tighten their belts and suffer a bit of pain for the gain of the unemployed and the underemployed these days. Is it too much to ask the dental profession to make some gesture to indicate that they are also considerate of the common man in these recessionary times.

Isadore Wolch, DDS
Winnipeg, Manitoba

Wearing the Other Person's Shoes

I was appalled at Dr. Dolansky's "President's Column" in the April issue. Certainly, many people have been harmed by the recession and find necessary dental treatment beyond their means at present. As a practising dentist, I share with many of our members the imposed necessity to work harder and longer, while taking home less money. Nevertheless, Dr. Dolansky is dead wrong when he suggests that there are only two solutions to ultimate price resistance (economies of scale or reducing costs/increasing efficiency). The painful third choice these days, already taken by too many dentists, is to close one's doors and go out of business.

Dr. Dolansky seems to suggest that we consider rolling back or at least freezing our fees, because for many people they seem too high. That is such a simplistic suggestion that it smacks of government. In order to reduce my fees I must work harder and/or longer, lay off staff, eliminate all my charitable gifts (including CFDE) and significantly reduce my already modest lifestyle. That plan might suit an Ontario government honcho, or an insurance company executive, but it just isn't possible for most of us. There truly comes a point beyond which the work and responsibility (not to mention the mortgages) just aren't worth it.

I agree with Dr. Dolansky that the perception of high cost is a difficult one with which we have always been saddled. That doesn't mean, however, that our fees are as high as some people might believe. Most of our patients clearly value our services highly, or they wouldn't continue to come during obviously difficult times. Sure, let's not raise our fees inordinately (the phrase is his). But if we were to cut our fees even in half, it would not help the recession to end one day earlier. So let's try to continue to provide our traditionally excellent

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and caring services at a fair fee, to help us and our clientele survive and get through to the other side of the recession. But let's not make ourselves into the whipping boys for the government, for the insurance industry or for anyone else who finds it convenient to believe that dentists are the rich kids on the block who have been spared the disasters that have ravaged everyone else in the country. It just ain't so!

Joel J. Wyman, DDS
Mississauga, Ontario

Wearing the Other Person's Shoes

Within the first few pages of the April issue of the *Journal*, one can find a letter criticizing Dr. Hardie's refusal to accede to the need of heat sterilizing every handpiece every time (Sussel, W.H. The Need For Sterilization. Letters. *J Can Dent Assoc* 59(4):319, 1993), his rebuttal of that criticism, based on the principles of infection control, and an apparently unrelated "President's Column" by Dr. Dolansky, regarding the fees that patients can reasonably be expected to pay. This discussion of Dr. Dolansky's refers to the fact that "patients are choosing to forego legitimate treatment needs because of economic concerns," and the fact that we need to become more sensitive to their position.

"Above all, do no harm." We need to apply this first principle of healing to the infection control recommendations that are being made on the basis of quelling public hysteria and being pushed by commercial interests. In this case, rather than protecting our patients by using ultra-stringent infection control procedures (if we are not really sure that they are necessary), we may actually be reducing our patient's health by making routine dental treatment prohibitively expensive.

It seems to be considered slightly "tacky" to openly discuss what infection control procedures are doing to our overhead expenses, but the fact of the matter is that these expenses are being passed on to the patient, and are

doing their part to reduce the amount of treatment that people can afford.

Before commencing any form of therapy, a practitioner has to consider the risk/benefit ratio of that therapy. When deciding one's position on the current infection control rage (of which the handpiece sterilization debate is only part) each responsible dentist must realize that too much of this medicine, like any other, will cause more harm than good.

K.M. Black, B.Sc., DMD
Bathurst, New Brunswick

Wearing the Other Person's Shoes

The "President's Column" that appeared in the April 1993 issue of the *Journal* struck a responsive cord that I felt should be elaborated on. Dr. Dolansky should be congratulated for his courage in addressing the topic, which at one point he himself refers to as "heresy of heresies." I should like to expand on his statements, "maybe it is time to consider what the public can really afford to pay for dental services instead of what we can afford to charge, and a little further on, "...we must resist the urge to raise our fees inordinately."

Allow me to first inform the reader that I am now retired, after over 42 years of private practice, and what I have to say is entirely factual. Furthermore, the major portion of my years in practice was during the post war economic heyday, and it was only during the last several years that 'busyness' in the dental office became an issue.

Virtually from the first day of practice I made the decision that it was my ethical and moral responsibility to make my services affordable, yet perform to the best of my knowledge and skill. I can honestly state that virtually from the first month of practice I never suffered from a shortage of patients and over the years developed a loyal and devoted following.

I wish to relate two incidents that are perhaps most illustrative of what I am trying to depict and indicate that more than once I was told

by some of my colleagues and the occasional patient that my fees were too low or I was not charging enough.

On one occasion, I actually lost a patient who required a complete upper and lower denture because he went to another dentist for a second opinion and was informed that a complete upper and lower denture with a 'glass palate' (i.e. clear acrylic) would cost almost three times more than I had quoted. The patient therefore felt that he was receiving a far superior service from the other dentist and said that he guessed I was okay for the poorer class of patient.

On a second occasion, after completing a multi-unit fixed prosthesis, which was highly satisfactory to the patient, he insisted on leaving me a \$100 'tip' because the dentist he had seen before he came to me wanted to charge him at least \$1,000 more. Naturally, I emphatically refused his offer, but since he was so adamant I suggested he make a contribution to a worthy cause.

My advice therefore to my younger colleagues and recent graduates considering private practice is to contemplate the above, give it serious consideration and perhaps even implement such a philosophy of practice.

Morton R. Lang, B.Sc., DDS.
Montreal, Quebec.

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¹Lareto, JI. Pros. Dent., 16:758-765, 1966.

²Cochran, Miller, Sheldrake, J. Amer Dent. Assn., 119:141-144, 1989.

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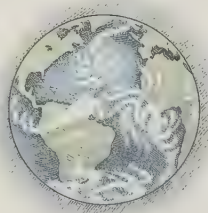
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NEWS UPDATE

Federal Government Employees Linked To CDAnet



It's great news! Effective June 1, dentists will be able to process the claims of federal government employees, excluding national defence reserves, through CDAnet. The federal government dental plans are administered by Great West Life Assurance Company.

As of May 1, 1,500 dentists in 865 offices were enroled in the CDAnet system. With the addition of the federal dental plans more dentists may want to join CDAnet to take advantage of the efficiency of electronic data interchange. ■

ACFD Develops Teaching Conference Protocol

The Association of Canadian Faculties of Dentistry (ACFD) has developed a protocol outlining the steps it follows in inviting and reviewing topics for the annual Canadian Fund for Dental Education (CFDE)/CDA Teaching Conference.

Following the June meeting of ACFD's management committee, the editors of *Forum* and the *Journal of the Canadian Dental Association* will be contacted by the association's executive secretary/treasurer and asked to publish a call for topics. Submitted topics

will then be sent to the chairmen of ACFD's committees for review and recommendations. These recommendations are then considered at the spring meeting of the association's management committee, which, in turn, submits its selected topic or topics to the CDA council on education for approval. The council has the final decision on the subject of the annual teaching conference.

Proposed topics should be forwarded to ACFD's executive secretary/treasurer at: ACFD central office, 109-1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. Submissions should be received on or before January 31.



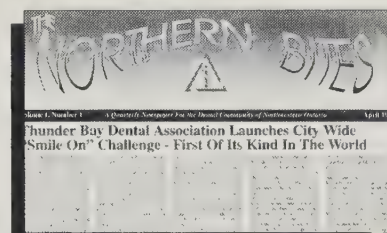
CFDE and CDA provide an annual grant of \$10,000 to the teaching conference (the 1993 event will actually receive a grant of \$15,000, thanks to the support of Procter and Gamble). This grant allows two delegates from each Canadian dental faculty to attend the event. Extra funds are generated by the registration fees paid by non-sponsored delegates. ■

Ontario Orthodontists Elect New Officers

The Ontario Association of Orthodontists has elected a new slate of officers for the 1993-94 session. Serving as president is Dr. John Doucet of Niagara Falls. He will be assisted by vice-president, Dr. Richard Marcus, Scarborough; secretary-treasurer, Dr. Hugh Fraser, Brampton; and immediate past

president, Dr. Theodore Schipper, Downsview. ■

The Northern Bites



Congratulations to the dentists of Northwestern Ontario for their recent publication of *The Northern Bites*. Volume 1, Number 1 of the newsletter rolled off the press in April. If the first issue is any indication of things to come, publisher/editor Dr. Peter DeGiacomo of Thunder Bay and his editorial committee can be justifiably proud.

Published in a 16-page tabloid form, *Northern Bites* brings local and national dental news and views to the more than 100 dentists, 100 dental hygienists and 150 dental assistants in the Thunder Bay, Kenora and Rainy River region. Although the first edition amply covers events of particular interest to the local dental community, national concerns such as fluoride supplements and alloy updates were not overlooked.

The first issue was also a success financially. It has been reported that advertising revenue was sufficient to cover all production costs.

An excellent example of what can be accomplished when a local dental community works together for a common goal. ■

Annual Continuing Education Mail Count

Our faithful *Journal* reader, who wishes to remain anonymous, has submitted his report on the number of continuing education pamphlets that arrived in his office over the last 12 months.

These numbers, while they are probably not vital to the dental

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community, give an interesting insight into the trends of continuing education. Significantly, the overall number of mailings continued to drop, falling from 110 in 1990, to 75 in 1991 and only 47 in 1992.

	1992	1991	1990
Practice Management	8	8	11
Implants	7	10	10
Restorative Dentistry	6	10	15
Orthodontics	4	2	13
Pathology/Medicine	3	2	5
Infection Control	2	2	2
Esthetic Dentistry	1	6	7
Periodontics	1	10	7
Prosthodontics	1	0	3
Geriatric Dentistry	1	4	3
Occlusion & TMJ	1	5	7
Other: (CPR, Sedation, etc)	5	4	9
Multiple Courses	6	4	14

Dr. Walter Pelech – Dentist-Photographer

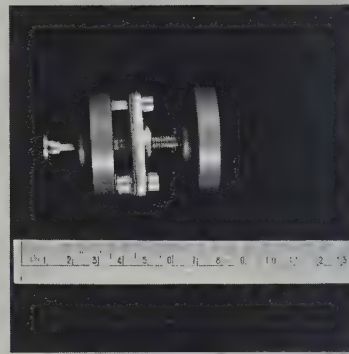
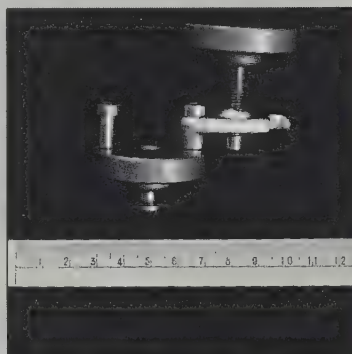
The photograph of Victoria's Butchart Gardens that appears on the cover of this month's *Journal* represents just one of the thousands of spectacular landscapes captured on film by dentist-photographer

"WHAT'S IT?"

Last month's "What's It?" didn't mystify many of our readers.

Thanks to Drs. D.A. Messersmith, Kitchener, Ontario; David M. Lampert, Downsview, Ontario; Henry Ross, Downsview, Ontario; B. Balinsky, Toronto, Ontario; Harold W. Helm, Ganges, B.C.; Roel J. Wyman, Mississauga, Ontario; David McNair, Vancouver, B.C.; for correctly identifying the Harvey Amalpress.

Prior to encapsulated amalgam, the amalpress was used to mechanically express excess mercury. ■



Dr. Walter Pelech of Toronto, Ontario.

Dr. Pelech, a 1974 dental graduate from the University of Toronto, maintains a busy, downtown Toronto general practice. He works four days a week, leaving as he says, "Fridays and the weekends to devote to photography."



To Dr. Pelech, the marriage of dentistry and photography is natural and complimentary. Recognizing that most dentists are perfectionists, he sees a parallel between the excellence and attention to detail that are required to provide quality dental care and a perfect photographic composition.

In his portraits, Dr. Pelech con-

veys his admiration and respect for people by depicting their sense of pride, self-esteem and dignity. For landscapes, he will return to a particularly exciting scene repeatedly to take advantage of the most favorable lighting, viewpoint, time of day or season.

Dr. Pelech's love of travel and photojournalism has taken him throughout the Americas, Europe, Africa and Asia. His photos have been published in the *Globe and Mail's Destination Magazine*, *Vista*, *Avenue*, *Pathways*, *Canadian Yachting*, *Financial Post* and *Photolife Magazine*. He has won numerous awards, including recent first place selections in the *Toronto Sun* and the *Toronto Star's* annual photographic contests. ■

CFDE Developing Funds Named

Canadian Fund for Dental Education (CFDE) developing funds have been established in honor of three prominent dentists who passed away recently. The funds were created in memory of the late Dr. Barbara Wilson, Dr. Donald Williams and Dr. William Madronich, in recognition of their dedication to dentistry.

"WHAT'S IT?"

This month's "What's It?" is made of a very hard wood, is hollow and has a screw cap. Like many of our "What's It?" items, it arrived at CDA in a box that contained various dental oddities dating back to the turn of the century.

If you know what it was used for, please contact Dr. Ralph Crawford, *Journal* Editor, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. ■



The Dr. Barbara Wilson Memorial Research Developing Fund was created by colleagues and friends in cooperation with the Ontario Dental Association (ODA), the Canadian Dental Association and CFDE. This fund will be used to support research on matters relevant to dental practice.

Dr. Wilson practised dentistry in Milton, Ontario. An active participant in dental affairs, she was past president of the Burlington Academy of Dentistry and a current member of the executive council of ODA.

Dr. Wilson died suddenly March 28, 1993, while on vacation in the Caribbean.

The Dr. Donald E. Williams Developing Fund was established in memory of the late Dr. Donald E. Williams of Moncton, N.B. A former president of the Moncton Dental Society and the New Brunswick Dental Society, he served as president of CDA in 1981-82.

Dr. Williams practised dentistry in Moncton for 35 years before his retirement. A graduate of Dalhousie University, he was awarded an honorary doctorate of laws by the university in 1982 and the Distinguished Alumni Award in May 1991.

Dr. Williams passed away at The Moncton Hospital in April, fol-

lowing a brief illness.

The Dr. William G. Madronich Developing Fund was established in memory of the late Dr. William Madronich of Hamilton, Ontario. It will be used to support dental and dental hygiene students in urgent need of financial assistance.

Donations can be made to these developing funds through the Canadian Fund for Dental Education, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All contributions are promptly acknowledged and are tax deductible. ■

**Obituaries**

Asselin, Dr. Raymond D.: Dr. Asselin graduated from the University of Montreal's dental faculty in 1969. He practised dentistry in St. Jean, Quebec. He died in January 1993.

Barker, Dr. Harry E.: Dr. Barker graduated from the University of Toronto's dental faculty in 1929. He was a life-member of the Cana-

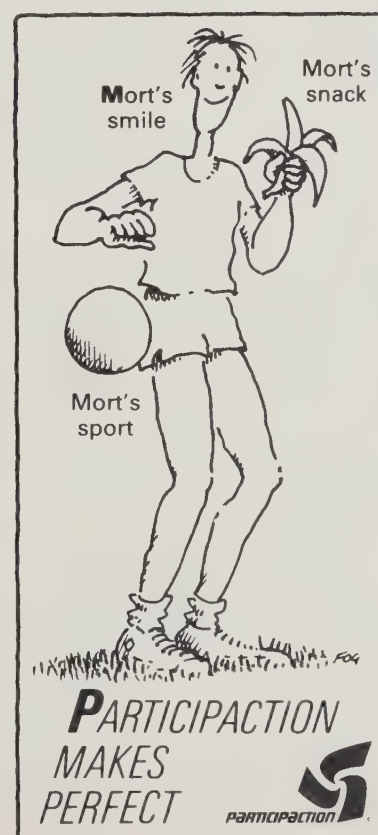
dian Dental Association. He practised dentistry in Barrie, Ontario.

Hirschberg, Dr. Norman: Dr. Hirschberg graduated from the University of Toronto's dental faculty in 1944. He practised dentistry in Vancouver, British Columbia. He was a life-member of the Canadian Dental Association. He died March 23, 1993.

Merrell, Dr. Joseph Hector: Dr. Merrell graduated from the University of Toronto's dental faculty in 1930. He was a life-member of the Canadian Dental Association. He died February 21, 1993. ■

Correction

In the March 1993 issue of the *Journal of the Canadian Dental Association* (Laval Dental School Granted Faculty Status. ("News Update") 59(3):228, 1993), it was noted that the school of dental medicine at the University of Laval has now obtained the status of a faculty. It was noted that with the attainment of this status there was anticipation that graduate programs would be offered in the future. It should be noted that a nationally recognized graduate program in oral and maxillofacial surgery has been in existence at Laval for over a decade. ■



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What's New In the Library This Month?

Dentin Bonding!

This month's Library Package contains current articles on the topic of dentin bonding. It is available to CDA members for just \$5. Just give us a call! The articles in this month's package were obtained primarily through a MEDLINE computer search.



1. Baier, R.E. "Principles of adhesion." *Oper Dent.* 1992; Suppl 5:1-9.

2. Balanko, M. "Bonded silver amalgam restorations." *J Esthet Dent.* 1992; 4(2):54-7.

3. Dutton, F.B. "Effect of a resin lining and rebonding on the marginal leakage of amalgam restorations." *J Dent.* 1993; 21(1):52-6.

4. Erikson, R.L. "Surface interactions of dentin adhesive materials." *Oper Dent.* 1992; Suppl. 5:81-95.

5. Fitchie, J.G. and others. "Evaluation of a new dentinal bonding system." *Quint Int.* 1993; 24(1):65-70.

6. Gwinnett, A.J. "Moist versus dry dentin: its effect on shear bond strength." *Am J Dent.* 1992; 5(3):127-9.

7. Hadavi, F. and others. "The effect of dentin primer on the shear bond strength between composite resin and enamel." *Oper Dent.* 1993; 18(2):61-65.

8. Hansen, E.K. "Five-year study of cervical erosions restored with resin and dentin-bonding agent." *Scand J Dent Res.* 1992; 100(4):244-7.

9. Hansen, S.E., Swift, E.J., Jr. and Krell, K.V. "Permeability effects of two dentin adhesive systems." *J Esthet Dent.* 1992; 4(5):169-72.

10. Kanca, J., 3rd. "Effect of resin primer solvents and surface wetness on resin composite bond strength to dentin." *Am J Dent.* 1992; 5(4):213-5.

11. Kanca, J., 3rd. "Effect of resin primer solvents and surface wetness on resin composite bond strength to dentin." *Am J Dent.* 1992; 5(4):213-5.

12. Jordan, R.E., Suzuki, M. and Balanko, M. "Bonded silver amalgam restorations." *J Can Dent Assoc.* 1992; 58(10):817-9.

13. Lin, A., McIntyre, N.S. and Davidson, R.D. "Studies on the adhesion of glass-ionomer cements to dentin." *J Dent Res.* 1992; 71(11):1836-41.

14. Oilo, G. and Um, C.M. "Bond strength of glass-ionomer cement and composite resin combinations." *Quint Int.* 1992; 23(9):633-9.

15. Paul, S.J. and Scharer, P. "Factors in dentin bonding. Part 1: A review of the morphology and physiology of human dentin." *J Esthet Dent.* 1993; 5(1):5-8.

16. Reilly, B. and others. "Shear strength of resin developed by four bonding agents used with cast metal restorations." *J Prosthet Dent.* 1992; 68(1):53-5.

17. Ruyter, I.E. "The chemistry of adhesive agents." *Oper Dent.* 1992; Suppl 5:32-43.

18. Sedighi, H., Davila, J.M. and Gwinnett, A.J. "Bonding to dentin: evaluation of three adhesive materials." *ASDC J Dent Child.* 1992; 59(5):329-32.

19. Swift, E.J., Jr. and LeValley, B.D. "Microleakage of etched-dentin composite resin restorations." *Quint Int.* 1992; 23(7):505-8.

20. Tseng, E.Y. and others. "Porcelain to dentin bond strength with a dentin adhesive." *J Esthet Dent.* 1992; 4(4):131-3.

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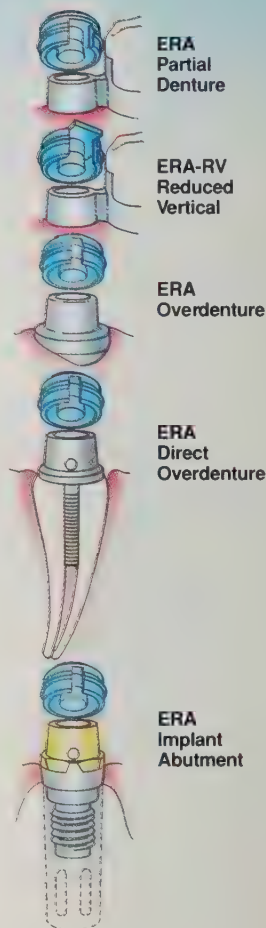
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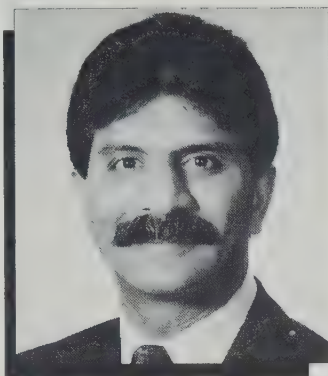
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Patient Newsletters: The Debate Continues

Imtiaz Manji, B.Sc.,
President of ExperDent

When the subject of patient newsletters comes up, I often find myself acting as an unwitting peacemaker in a veritable war of words. Notwithstanding those dentists who quickly (and sometimes blindly) dismiss newsletters as unethical "advertising," the fight usually revolves around the efficacy of this communications tool. For every dentist or consultant who confidently declares, "Newsletters work," it seems that there are an equal number (with matched conviction) who state unequivocally, "Newsletters don't work!" The shots now fired, the argument may end there, leaving both camps thoroughly unimpressed with their opponents' vehemence.

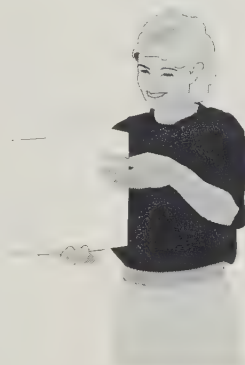
But if they were to continue their debate, they might find that such blanket generalizations, on either side, are inappropriate. It's possible that there is anecdotal "evidence" to support either assertion, but it's just as likely that the proponents and opponents are using different yardsticks to measure the effectiveness of patient newsletters.

The Purpose of Newsletters

A newsletter, like your other internal marketing efforts, should demonstrate that you truly value the patronage of your existing patients. It should be a powerful communications tool that builds goodwill, informs your patients of the latest advances in dentistry as well as the happenings in your office, enhances your image as a credible expert, increases treatment acceptance, stimulates referrals and,

most significantly, promotes retention. If these serve as the *raison d'être* for your newsletter, you're likely to feel a sense of "mission accomplished" when you use this communications vehicle.

However, some dentists hold a dim view of what I call the qualitative impact of patient newsletters. They are much more single-minded about newsletters, arguing that as long as their results can't be tangibly measured, then newsletters are not worthwhile. What these individuals want is numbers — largely in the form of new patient flow. And if this quantitative impact isn't guaranteed, the argument becomes, "Why bother?"



For such number-crunchers, publishing a newsletter can be a risky business. The reason is this: Their expectations are more appropriate for direct marketing activities, as opposed to indirect ones such as the publication of a newsletter. Direct marketing is done by many industries and professions. For example, in looking to compete with the major chartered banks, a trust company might do a

direct mailing to selected households, boasting about the minimal service charges on their accounts. Any new accounts that were subsequently opened could be tracked and identified. Quantifiable data is available to indicate whether new customers were gained as a result of the direct mailing campaign or not.

The effects of sending out a patient newsletter (an indirect marketing activity) to current patients (an existing market) is not so easily tracked. Although I've heard dentists boast, from time to time, that they have received new patients directly from their newsletter (e.g. a new patient saw the newsletter at an existing patient's home), this is only one byproduct of newsletters, albeit a welcome one. Because a patient newsletter is one of many internal marketing activities that stimulate referrals, you won't always be able to pinpoint its particular potency. (Quantifiable data may be more evident with respect to increased treatment acceptance and patient retention. For example, patients who were reluctant to come in for regular hygiene visits may be prompted to do so after reading about periodontal disease in your newsletter. Similarly, case presentations that were previously rejected may be activated as patients' dental IQs increase through the education they receive in your newsletter.)

How Newsletters Are Done

If you've decided that newsletters are a worthwhile communications tool, your next task is to work

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out the details, including:

- how to put your publication together
- frequency of publication
- content
- design and format
- printing and distribution

Putting it Together

Whether your patient newsletter should be done in-house or farmed out to publications professionals is a decision only you can make. Practices often choose to do the newsletter themselves, but discover (sometimes before the first issue is even published!) that their enthusiasm for creating a newsletter isn't nearly as pronounced as it was for having one. They soon realize that the time investment to produce a quality newsletter is significant and, in most cases, the project gets deferred or abandoned altogether.

However, there are always exceptions to the rule. Once they have an understanding of what it takes to produce a newsletter, practices which are still committed to do so can accomplish this goal. Some opt for a combination of in-house talents and outside professionals.

The job of the professionals is to take the newsletter "headaches" away from the practice. At a cost equivalent to three to five hours of your production, they orchestrate the process from beginning to end, from recommending topic ideas and interviewing staff, to writing articles and doing the design work. If they're skilled, the impact on the practice's time should be negligible.

Frequency

Many practices find that publishing two or three times a year proves most effective. Two times a year is the minimum I recommend, and three is the ideal. Once a year doesn't seem to be enough, and four issues per year can prove too costly in terms of both time and dollars. Whatever you do, don't end up doing a newsletter as a one-off. There's little point in planting the seed in your patients' minds that they can expect a regular

newsletter, only to subsequently shelve the idea.

Although newsletters can be issued at any time, some thought should go into actual publication dates. For instance, it makes sense to publish in April, as it's Dental Health Month.

Content

The sky is really the limit when it comes to the content of your newsletter. With all the advances in dentistry, you should never be lacking in ideas. Whether it's an article about a clinical development, such as cosmetic dentistry and lasers, or an administrative milestone that benefits patients, such as electronic data interchange (EDI), your newsletter is the appropriate vehicle for disseminating this newsworthy information.

Although educational dental in-

something of interest for everyone.

There are two golden rules which should dictate content decisions: 1) the newsletter should be audience sensitive (i.e., written for your patients, jargon-free etc.); 2) it should be interesting, informative and entertaining. It should never be dressed-up advertising.

Design and Format

Unfortunately, the design of patient newsletters, a key component, is often given the least attention of any element in their production, or, worse, it's not even considered. This tendency is particularly pronounced with those practices which publish their newsletters in-house, unless there is a team member who is familiar with graphic design and desktop publishing. Not only is this expertise usually unavailable in dental practices, the

It is a powerful communication tool that builds goodwill, informs your patients of the latest advances in dentistry as well as the happenings in your office, enhances your image as a credible expert, increases treatment acceptance, stimulates referrals and most significantly, promotes retention.

formation is important, the newsletter should also contain information about your practice, from details about the launching of a children's program or a profile on a staff member. For instance, you might want to include an article about the staff person who calls patients for their recall appointments, as well as a photograph. This puts a face on this "behind the scenes" person. And don't forget to highlight the continuing education courses taken by your team. Dental professionals spend a lot of time on continuing education, but for some unknown reason this important fact is never revealed to their patients.

Make sure to strike a balance with the content. If it's diverse, you'll increase the odds of capturing your audience. As with most publications, your newsletter won't be read cover to cover. Patients will focus in on the areas that interest them. The idea is to have

tools of the design trade – be it software programs or image scanners – are also conspicuously absent.

Professional designers can advise you on all aspects of the visual arena: the use and placement of photographs (which add a personal component to your newsletter), the appropriate typeface (as some are more readable than others), ink colors, and paper stock. They'll also hone in on such subtleties as "white space" – the areas on the page which are free of graphics and text. For instance, if you're trying to cram four pages of material into two, a trained designer will let you know that although you may save money at the printer by doing so, you run the risk of visually discouraging your newsletter from being read.

Printing and Distribution

Before your newsletter goes to

print, you'll have to decide on the paper stock and weight, the ink colors, and the quantity needed. Some companies that produce newsletters also handle the job from start to finish, and ship clients the final product. Others supply camera-ready artwork that the client can take to a local printer.

Once your newsletters are back from the printer, your task is to get them out to the patients. Mailing newsletters (be it to all patients or targeted ones) seems to be the best way to get patients to take notice. But make sure to print enough copies so that extras are available to put in your reception area. This way, new patients can be given copies and existing patients, who may not have received the newsletter due to a change of address, etc., also have an opportunity to absorb the information.

Summary

Producing a patient newsletter is a worthwhile venture if you're doing it for the right reasons. As one component of an overall internal marketing strategy, it demonstrates to patients that you are a concerned caregiver, not only during their visits to your practice but in between those visits. If it's a professional-looking publication with quality content and visuals, it will likely be appreciated by your patients. And as you well know, the dental profession is certainly not suffering from a surplus of appreciation.

DON'T RUSH YOUR BRUSH



A quick brushing may leave your mouth feeling fresh, but it *can't* get your teeth thoroughly clean. And that means trouble. If you're brushing for keeps, it takes about three minutes to do the job right.

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CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	April 30, 1993	March 26, 1993	
Bond & Mortgage Fund	104.69725	103.99854	13.9%
Common Stock Fund	20.51529	19.70999	17.4%
Money Market Fund	64.06412	63.74508	6.1%
Balanced Fund	38.85352	38.25277	11.4%

G.I.C. Fund

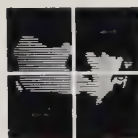
Term	April 30, 1993	March 26, 1993
1 yr	5.60%	5.85%
2 yr	6.10%	6.35%
3 yr	6.35%	6.60%
4 yr	7.10%	7.10%
5 yr	7.15%	7.35%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

April 30, 1993 March 26, 1993
\$178,525,318.93 \$176,663,365.00

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

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1-800-561-9401 Service in English
Extensions:
252, 253, 254
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THIS CHAIR HAS SET THE STANDARD SINCE 1983.



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By designing our chair in tandem with our new Cascade handpiece delivery system, we were able to route the umbilical directly through the chair, removing it from view. Add to that a chair control touch pad mounted to the handpiece control and you truly have the dental chair of the future. But enough talk. Contact your nearest A-dec dealer to get your hands on every feature-packed inch of Cascade. Once you do, you'll never look at dental chairs the same way again.

CASCADE 

Essential Protection for the Computerized Practice

Data Processing Insurance from the Canadian Dentists' Insurance Program

Computers are transforming the management of the dental practice. But what do you do when your system is damaged or down?

Protection is essential — for your equipment, for your income, and for your records.

The new Data Processing Insurance plan from CDIP offers all-risk coverage for the computerized office. Created to meet the specialized needs of the dental practice, the plan offers protection against damage, theft, breakdown, and practice interruption under one convenient, inexpensive premium. Depending on the value of your computer system, your premium could be as low as \$50.

The plan provides coverage for:

- ☒ all components of your data processing equipment
- ☒ all forms of converted data, programming, and instruction vehicles used in your computer operations
- ☒ extra expenses following an insured loss
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Special features include:

- ☒ no deductible for claims over \$1,000
- ☒ first hour coverage for practice interruption
- ☒ automatic 30-day coverage for new equipment.

For more information on Data Processing Insurance call CDSPI:



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The Modular Dental Management System, EXCEL, is endorsed by CDSPI. For information contact Zadal Systems Group Inc. Telephone 1-800-663-1236.



HIV Insurance Coverage

Dr. Rod Moran, President of CDSPI

As health care workers, dentists are at risk for contracting the human immunodeficiency virus (HIV) from exposure to a sharp instrument, such as a needle, contaminated with blood from a HIV-infected person. The dental profession has responded admirably to the challenge of HIV infection in the dental setting, continually demonstrating its commitment to the health and safety of dentists, their staff and patients.

In 1988, the Canadian Dental Association, in response to this challenge, developed and published guidelines on infection control. In April 1991, CDA sponsored a historic conference on The Impact of HIV and Other Infectious Agents on Oral Health Care. The conference dealt with the ethical, legal and professional considerations of HIV infection and other blood-borne infectious diseases in the dental setting. In its ongoing effort to keep dentists up to date on health and safety issues, CDA also publishes the most recent research studies of the day.

CDA has also provided leadership on the insurance front. In September of last year, CDA added a HIV/hepatitis B rider to its Canadian Dentists' Insurance Program long-term disability plan (CDIP LTD) – at no extra premium to participants.

If you participate in the CDIP LTD plan, you automatically receive HIV insurance protection. The LTD plan guards against one of the realities of HIV infection – a diminished ability to earn income. Consider that after being diagnosed HIV-positive, people can live for years. However, during that period one's ability to practise dentistry could be seriously affected.

Under the HIV/hepatitis B rider,

benefits are paid monthly up to age 65 in the following two conditions:

Condition 1

LTD benefits begin as soon as an hepatitis B-positive or HIV-infected dentist suffers a loss of income of greater than 15 per cent due to a government or dental licensing body requirement that the dentist limit his or her practice. Even if the dentist is asymptomatic and able to function normally at work, he or she can collect benefits because his or her ability to earn income would have been adversely affected by the ruling.

Condition 2

CDIP LTD participants, who contract HIV or hepatitis B, are also entitled to collect benefits when either of these diseases renders them medically disabled.

Recently, I have been approached by colleagues inquiring why "at time of diagnosis" HIV insurance coverage – also called lump sum coverage – is not available for dentists.

They point to the example of Ontario nurses. In February of last year, Ontario nurses became the first (and only) group of Canadian health care workers to receive "at time of diagnosis" HIV insurance coverage. Under this plan, benefits are paid for HIV infection contracted in the workplace. There is an immediate pay out (\$40,000 for full-time nurses and \$25,000 for part-time nurses) as soon as HIV infection is confirmed after a 48-hour waiting period. Since the virus that causes AIDS will not appear in tests in the first 48 hours after contact, the claimant must test HIV-

negative during this waiting period.

The nurses have a mandatory group policy. Therefore, all 55,000 members of the Ontario nurses' union must participate in the insurance plan.

It is because of the mandatory aspect of this type of coverage that lump sum HIV insurance is not being offered to Canadian dentists. The decision, by the CEOs of CDA's corporate members and the registrars of the provincial licensing bodies, to reject mandatory coverage was announced in the April issue of *Communiqué*. The decision is reasonable, since not all dentists feel they are at risk for contracting HIV and, therefore, do not want a mandatory insurance program – and mandatory premium – imposed on them.

As CDA's council on insurance and investment, Canadian Dental Service Plans Inc. (CDSPI) researched "at time of diagnosis" HIV coverage on behalf of CDA. We did not find any insurer who would give this form of coverage on a voluntary basis, at any price.

Insurers are only willing to offer lump sum coverage on a mandatory basis because they are better able to protect their risk if they have a large pool from which to collect premiums and underwrite the cost of providing this coverage.

In the long run, protecting one's ability to earn may be the most appropriate way of guarding against the financial consequences of HIV infection. A single, lump sum payment would not provide the financial security one needs throughout years of a prolonged illness. Instead, a regular schedule of benefits such as is offered through CDA's long-term disability plan may be the better alternative.

BOOK REVIEWS

Advances in Periodontics

Thomas G. Wilson, Kenneth S. Kornman and Michael G. Newman

1992, Quintessence Publishing Co., Inc., Illinois
383 pages

Advances in Periodontics reviews the latest developments in periodontal treatment. Its contents should be of interest to anyone treating periodontal disease, from dental student to specialist. The text's special format emphasizes the application of treatment principles based on disease severity rather than focusing on technique.

The text is divided into four parts. The first two parts deal with examination, diagnosis and treatment planning, and include chapters in microbiology, imaging techniques for the periodontium, and periodontal disease activity. Patients are separated into two categories:

- a. Chronic gingivitis and periodontitis
- b. The more aggressive lesions, including early onset forms of periodontal disease, those associated with systemic disease, and refractory periodontitis.

The third and fourth parts of the text cover the application of more advanced techniques in occlusal therapy, restorative dentistry, mucogingival surgery and implant therapy. These sections can be used independently of the first half of the text.

Each chapter in the final two sections is formatted to include current concepts, clinical applications and a quick review. Although the emphasis is on the development of current concepts, the text is well referenced and easily directs the reader to other literature if further information is required.

The basic surgical procedures of implantology are not covered. Instead, this text deals with specific strategies for improving implant placement, including the use of regenerative procedures for ridge augmentation and immediate im-

plant placement. Illustrations help to show how current concepts are applied in clinical practice. The quick review at the end of each chapter summarizes the points discussed and makes information easy to locate, if required, at a later date.

The clinical photographs are of excellent quality and are accompanied by well-detailed illustrations. Because many of the techniques are new and not found in many textbooks, this publication can be a valuable teaching aid.

Reviewed by:

Monique M. Fitch, B.Sc., DDS, Cert. Perio., MRCD(c)
Periodontist at the Bridle Trail Medical-Dental Centre in Unionville, Ontario.

Anesthesiology Review

Edited by Ronald J. Faust

1991, Churchill Livingstone, New York
535 pages, black and white drawings and illustrations, \$46.95 (Cdn)

This soft-cover text represents the work of close to 75 contributors, many of them postgraduate anesthesiology residents. Its contents are divided into three main sections: the physiological sciences, the physical sciences, and the clinical sciences. In turn, these main sections are split into 14 subsections, including: physiology, pharmacology, anatomy, physics, anesthesia for various disease states, regional anesthesia, and special problems and complications. These subsections have been further divided into 217 two- to three-page summaries of selected topics in anesthesia. Suggested readings are provided for each topic, along with several major references, but the topics are not directly referenced in the body of the text.

Anesthesiology Review's objective is primarily to assist anesthesia residents preparing for specialty examinations. More than 200 keyword phrases from the 1986-1989 American Board of Anesthesiology

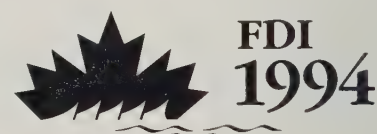
written examinations were used in selecting the topics presented in the text. Its goal, which is described in the preface, is to concentrate on essential and relevant information rather than providing a major reference text. To this end, it has been very successful. The cited references following each topic will provide the reader with a source of more in-depth review.

The book is rather large, containing well over 500 pages. Although the detail in each selected topic is not excessive, it is adequate and reasonably up-to-date. To highlight the contributors' intent when preparing this book, there is a concluding appendix that classifies the relevant knowledge required of the trainee in anesthesiology according to the appropriate short phrases from which, of course, examination questions are taken.

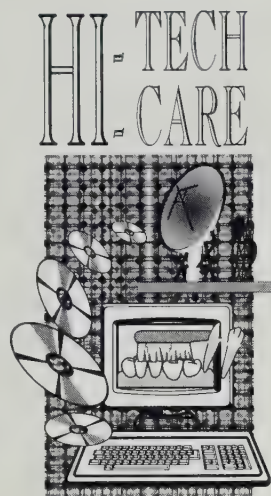
This book would provide any dentist or physician with a good basic review, particularly of physiology and to some degree pharmacology. Even better, however, it applies these disciplines to the provision of therapeutic and, in particular, anesthetic services. While not all inclusive with respect to the range of topics discussed – I can think of several that I wish were included – the book is a very valuable addition to the health care workers' library.

Reviewed by:

Earle R. Young, B.Sc., DDS, B.Sc.D., M.Sc., FADSA
Associate professor and head, department of anaesthesia, faculty of dentistry, University of Toronto and The Wellesley Hospital.



Fédération Dentaire Internationale
82nd World Dental Congress
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Electronic Imaging In the Dental Office

Dale A. Miles, DDS, MS

Elliot R. Davis, DDS

Introduction

"Recent advances in computer technology and new image capture and display devices have revolutionized the field of radiology in medicine. Dental radiology or oral and maxillofacial imaging is poised to enter this new age of radiographic imaging."¹

I wrote this three years ago for a textbook released last August. I now realize just how quickly textbook information becomes obsolete. The future that I wrote about is here. It has been since Dr. Francis Mouyen introduced RadioVisioGraphy to North America at the Chicago mid-winter convention in 1988. In fact, I have come to realize that the technology used to capture X-ray or light photons for image display has actually been around for almost 30 years.²

Charge-coupled devices (CCDs) are used for all kinds of imaging techniques (Table I). In 1991, for example, CCDs actually guided

TABLE I

Current Applications of CCD Detectors

Video cameras
Optical Microscopes
Astronomy Telescopes
Intraoral Videocameras
Digital Panoramic Radiography

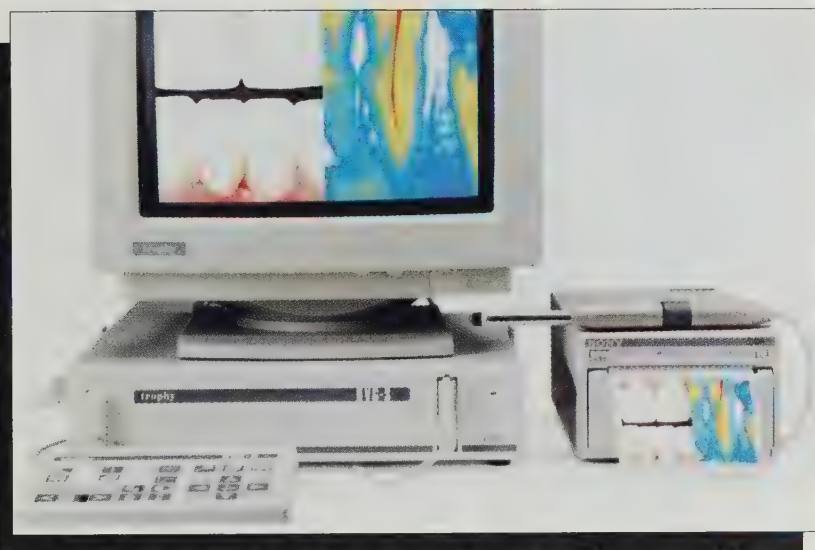


Fig. 1: The Trophy RVG-S imaging system reveals a clinical image captured on an intraoral video camera, and an RVG digital image enhanced with "pseudo color" to better visualize the endodontic file. "Hard" copy is seen coming from the video printer at the right (photo courtesy of Dr. M. Razzano, President, Trophy USA, Marietta, Ga.).

the "smart" bombs used in Operation Desert Storm to their targets. Today, they allow scientists to image galaxies millions of light years away with great clarity and resolution. And in the future, they will make as big an impact on dental

TABLE II

Imaging Properties of CCDs

High Resolution
High X-Ray Sensitivity
Wide Dynamic Range
Photometric Accuracy
High Signal-to-Noise (S/N) Ratio

practice as Roentgen's discovery of the X-ray in 1895.

Whether you realize it or not, many of you already own a CCD. It's the electronic chip that makes your home video camera work. The real-time image of your child's birthday party, your exotic island trip, or that last family reunion were all captured on a CCD for storage on videotape.

Charge-Coupled Devices (CCDs)

Not surprisingly, given their versatility, CCDs have also found a home in North American dental offices (Figs. 1 to 3).

In fact, they are the heart of in-

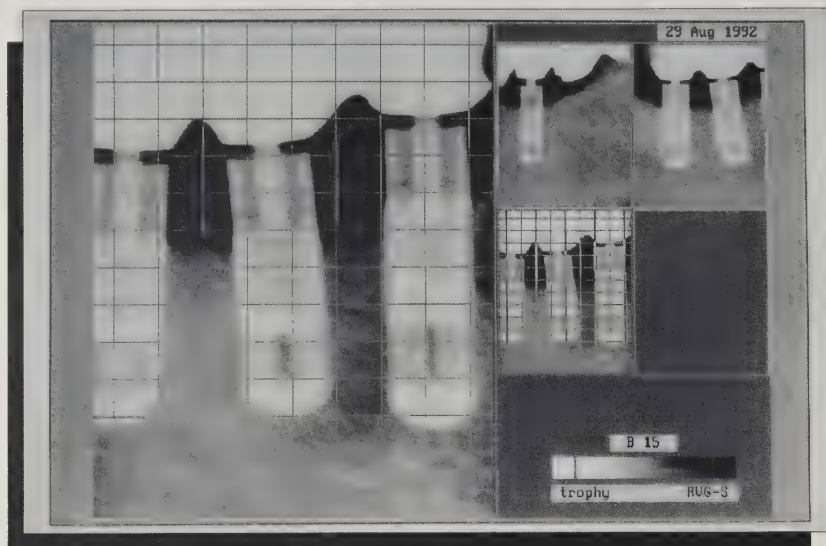


Fig. 2a: Direct digital image from the RVG system showing a 2.0 mm grid display for assisting with implant length/site determination.

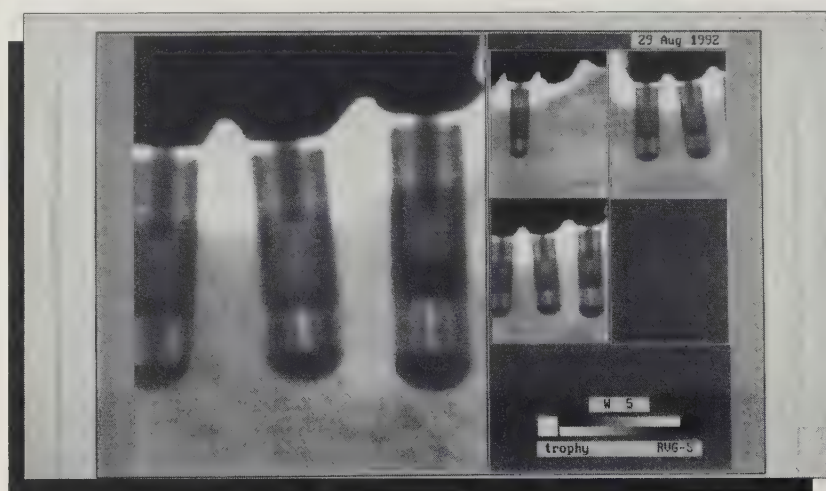


Fig. 2b: Same implant site without the grid and with the gray scale reversal to help assess degree of osseointegration (Figs. 2a and 2b courtesy of Dr. Charles Babbush, Cleveland, Ohio).



Fig. 3a: Typical extra oral imaging system with video camera, imaging board, CPU, video monitor, storage drive, and interactive palette for treatment planning and esthetic dentistry display (photo courtesy of Envision Technologies, Indianapolis, Ind.).

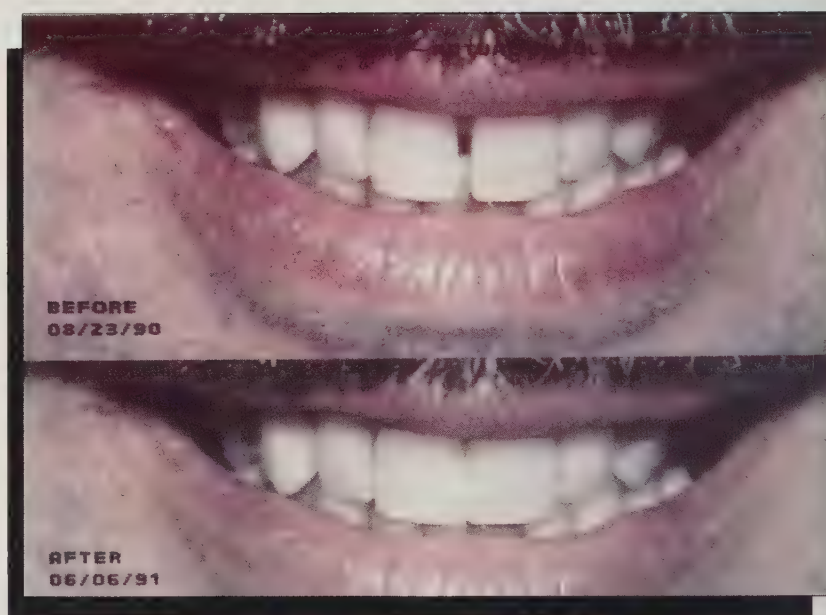


Fig. 3b: Before and after picture of a diastema "closure" with composite resin. In this case however, the "restoration" was performed only on the computer screen to help the patient visualize the treatment result.

traoral video-camera and digital X-ray imaging systems.

CCDs are solid-state semiconductors, "chips" if you like, that have excellent imaging characteristics for dentistry (Table II).

(Fig. 4 shows a schematic diagram of an area array CCD, with a captioned explanation of how it works.)

Digital radiography will replace conventional film-based X-ray systems in dental offices within five to 10 years. The "hardware" is here now, and commercially available, and the software is on the way. This software, which dentists will integrate into their office computer systems, will not only allow better disease detection, but also assist dentists in their clinical treatment decisions. The end result will be improved patient care.

In the very near future, the dental operator will contain a computer platform that will allow peripheral imaging components such as video cameras and digital intraoral and panoramic units to be integrated quickly and conveniently into the practitioner's office system. In turn, this will open the door to image capture, image display, and image reconstruction techniques that are closely akin to the digital, CT and MR techniques currently used in medical radiology. These computer systems will have significant databases contain-



Fig. 3c: Close up view of a patient's oral problem. The patient sees the image on a video monitor magnified several hundred times.

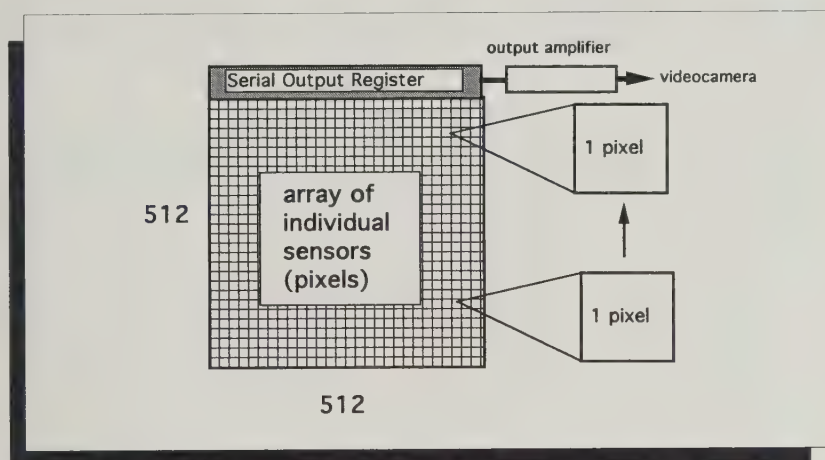


Fig. 4a: A schematic diagram of an area array CCD detector. Each small square represents a picture element called a "pixel." The array is square with 512 pixels per side. Electrons gathered in these pixel areas are transferred one horizontal line at a time and the charge or number of electrons deposited in each pixel area are recorded as an electric charge. This charge is quantified, amplified, and sent to the video monitor as a density level to be displayed as a gray level. The clinician sees blacks, whites, and shades of gray just as in a radiograph—only now the clinician can change the density and gray levels to detect change more precisely.

ing information about oral lesions, systemic diseases, and pharmacotherapy. With this information at their fingertips, dentists will be able to manage their patients' problems quickly and efficiently. There will be much less need for dentists to reconsider all the details of their past experience and training, much of which will have changed significantly since they graduated from dental school because of advances in scientific discovery.

Dentists will be able to image soft tissue disease such as aphthae, herpetic lesions, early changes due to malignancy, periodontitis, etc.,

and monitor their treatment of these lesions quantitatively. Lesions of bone will be treated in the same fashion. Dentists will be able to view the architecture of the bony periodontal defect in 2D and 3D on the video monitor, manipulate the image contrast or density to enhance the features of the lesion, and rotate the image on the screen to better estimate the change.

Digital Imaging

The CCD in a digital system is called the "detector." X-ray film is the detector in conventional intraoral radiography. **Fig. 5** com-

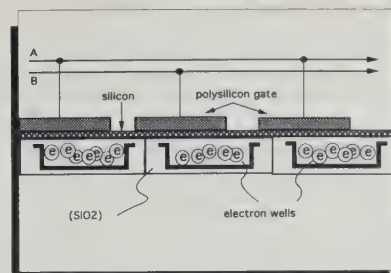


Fig. 4b: The various components of several pixels with their electron storage areas called "electron wells." The charge gathered is in a number of electrons displaced from the silicon surface by incoming light or X rays. The polysilicon gates are "opened" at intervals (in milliseconds) and the charge is transferred up to the serial register for signal amplification.

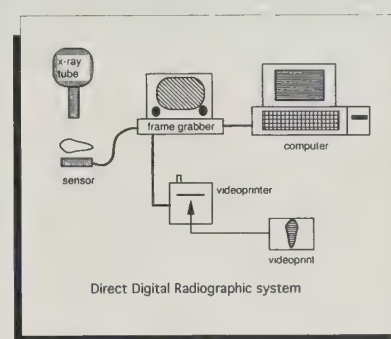


Fig. 5a: A diagram of a typical direct digital imaging system. X or light rays pass through the object (tooth) and the electronic sensor (CCD) detects the signal. The signal is sent to a frame grabber which displays the light pattern (signal) constantly on the monitor. A computer interface with the frame grabber monitor allows the clinician to use software to manipulate the image contrast, density, etc. for eventual hard copy (usually video paper). Hard copy is available in seconds!

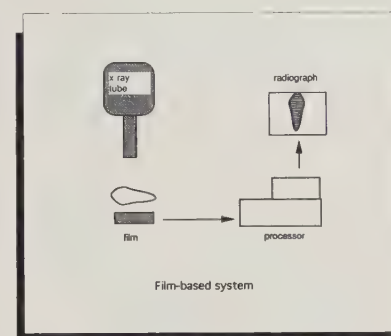


Fig. 5b: A conventional film-based system. This should need no explanation. Hard copy or the radiograph is available for interpretation in 4.5 to 7.0 minutes!

pares the conventional radiograph system to the digital imaging system. It's clear that the introduction of the CCD coupled to a video monitor and computer has some distinct advantages for image manipulation. However, there are

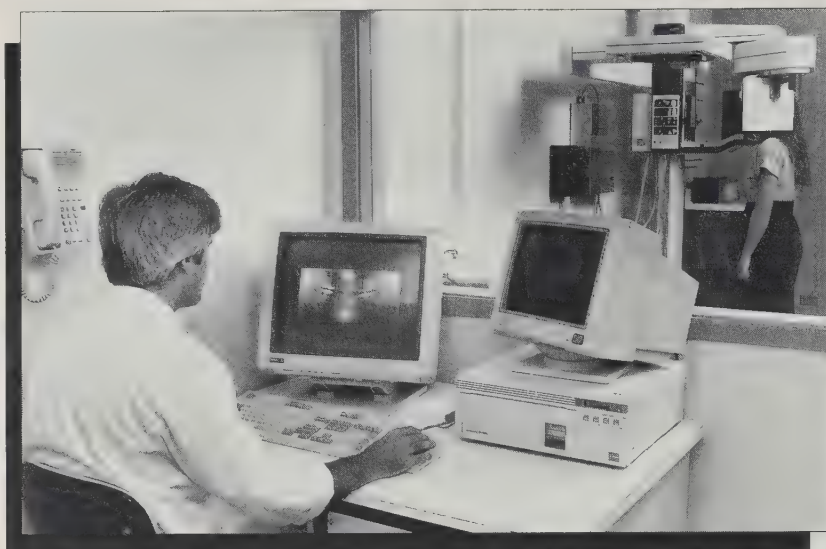


Fig. 6: A prototype digital panoramic system. (Photograph Courtesy of Mosby-Year Book, Inc. *Oral Surg Med Oral Pathol* 71: 499-502, 1991)

trade-offs. An electronic system can introduce "noise" into the final image, which can degrade the image quality. Each electronic device in the system adds its own noise. This noise is compensated for somewhat by the digital system's ability to manipulate image characteristics such as contrast, brightness, object edges (edge enhancement), and image size (magnification). With the introduction of 3D reconstruction and pseudo-color enhancement software, the electronic systems will surpass film as the optimal imaging modalities.

There are two types of CCD detectors – linear array detectors and area array detectors. Three companies currently manufacture intraoral, area array X-ray detector systems (**Table III**). Considerably more companies are competing in the intraoral video camera market. These devices also use area array detectors (**Table III**). Currently, only one company has developed a linear array system for use in panoramic radiography. Drs. Brent Dove and Doss McDavid of the Biomedical Imaging Corporation (San Antonio, Texas) have patented a system called the DPX panoramic unit as a prototype for dentistry (**Fig. 6**).

The CCD is made of pure, scientific-grade silicon. Embedded in the silicon is a solid-state electronic circuit. When X or light rays strike the silicon, covalent bonds in the silicon lattice structure are broken

and electrons are released. These electrons can be stored in regions of the silicon called potential wells (**Fig. 4**). The well itself is termed a "pixel" (for picture element). It consists of a small square, as small as $20 \times 20 \mu\text{m}$, which stores the electrons as a total charge until an electronic gate is opened to transfer the charge, one row at a time, to a serial register at one end of the detector array, which then "reads out" the electric potential, amplifies the signal and sends it to the video monitor. This electronic signal is termed an analog signal, which is converted to a digital signal (assigned a brightness level as a whole number proportional to the incident light or X-rays) for computer display. These bright-

TABLE III

Intraoral Videocameras

American Dental Laser (American Dental Camera)	Oral Vision (Oral Vision Intra-Oral Camera System)
Code, Inc. (Division of Young Dental) (DentVision)	Orascope Research (Telescopes) (Clip-On Spotlight)
Cygnus Instruments, Inc. (Cygnascope)	Pro-Den Systems, Inc. (Pro-Scope)
Dentsply/Specialty Products Division (Perspective Dental Imaging System) (Retrospective Treatment Plan Consultant)	Progressive Imaging, Inc. (PI-1000 Video Imaging System, Model 4)
Fuji Optical Systems, Inc. (Vision Plus) (DentaCam)	Trojan Clinical Camera Systems (The Ultra-Eye+)
Gilcom Technology, Inc. (DentaScope)	Envision International (DentaVision)
Henry Schein, Inc. (Deluxe Still Video Imaging Dental System)	Cosmetic Imaging Systems (CIS-2)
Lester A. Dine, Inc. (Oral Scan Video Imaging System) (Dine's Polaroid Camera)	Healthco International (Celebrity 70V)
New Image Industries, Inc. (AcuCam) (AcuView)	Trophy Radiology (StomaVision STV)
Midwest (handpieces & angles w/fiber optics)	Osada Electric Company (PEDO series & LX series)

CCD X-ray Systems

Intraoral	Panoramic
RVG (RadioVisioGraphy) (Trophy RVG-S)	DPX (Digital Panoramic X-ray) (Biomedical Imaging Corp)
REGAM (Reagam Medical Systems AB)	
Visulix (Gendex)	



ness levels correspond to the grey levels (one to 256) seen on medical images such as CT or MR films. In dental systems, once the image information is in a digital format it can be manipulated by computer programs called algorithms, similar to CT or medical digital radiology.

Applications of Electronic Imaging with CCDs*

The applications of CCD-based X-ray systems include:

1. 2D/3D reconstruction for bone loss, implant assessment, condylar changes, and root canal morphology.
2. Digital subtraction of caries and periodontal changes.
3. Electronic consultation from remote sites.

The applications for CCD-based video camera systems include:

1. Improved detection of caries (when coupled with laser fluorescence of dyes).
2. Improved detection of marginal wear of restorations.
3. Improved detection of common oral lesions.
4. Early detection of premalignant lesions.
5. Quantification of disease change over time (caries, inflammation, ulceration, etc.).
6. Improved treatment plan presentation (patient education).
7. Remote electronic consultation.

The Future of Electronic Imaging

With the introduction of commercially-available imaging systems and their increasing acceptance by dentists worldwide, the "age of electronic imaging" has arrived. Electronic databases, faster, cheaper computers, improved image storage devices such as three dimensional optical compact disks (CDs), improved CAD/CAM systems for restoration construction, and the integration of various components of these technologies will make it fun to practise dentistry again – and improve the standard of patient care. Electronic consult-

ation will allow dentists to consult with colleagues at institutions and conduct "cutting edge" research for the latest treatment modalities, even from remote locations, thus saving the patient costly travel time and work loss expenses.

Diagnoses will be made using the information acquired from a consensus panel of experts, working in multiple locations, to expedite treatment of serious lesions such as oral cancer, systemic diseases, and odontogenic cysts and tumors. Signals will be received at these remote consultation sites either directly on the video monitor or by video print. Dr. Alan Farman and the American Academy of Oral and Maxillofacial Radiology have already demonstrated teletransmission of RVG (RadioVisioGraphy) images transcontinentally – from Louisville, Ky. to Seattle, Wash., without loss of information.⁴ They have, in fact, also performed the same feat intercontinentally from Louisville to Paris, France, and Amsterdam.

CCDs go beyond dentistry, however. There are researchers working on expert systems (artificial intelligence) that will allow computers to search for specific disease "signals." Imagine a dental equivalent to the "smart" bomb, which would tell the difference between apical radiolucencies to distinguish active endodontic infections from periodontic infections and healing scars. Imagine a "smart" dental camera, which, in conjunction with a computer, would allow dentists to visually "peel away" the gum tissue to reveal the underlying bone topography or allow the visual "lifting" of a tooth out of its socket, allowing the dentist to inspect its root surface and periodontal ligament. These currently unavailable representations of the CCD would unleash a plethora of information, and afford dentists a greater understanding of the tooth/bone/gum relationships.

The office of the future will need only one computer in every operatory, with integrated programs specific for data management, diagnostics and treatments. If this seems unrealistic, look at the wide array of software packages now inte-

grated on a typical desktop computer. Researchers have recently developed software programs for computer-assisted diagnosis of periapical lesions,⁵ and more of these expert pattern-recognition systems are on the way.

Finally, don't think that these advances will replace the need for dentists (unless you believe calculators have eliminated the need for engineers, or that word processors have eliminated secretaries). On the contrary, this imaging technology will enhance the diagnostic capability of dentists and improve patient treatment, while reducing the time necessary to assimilate information and deliver therapy.

Dentists should welcome these new applications and technological advances with open arms. They are about to make dentistry more fun as well as more precise. ■

**Adapted from Miles, D.A. Imaging Using Solid-state Detectors DCNA 37(3):1993, (in press).*

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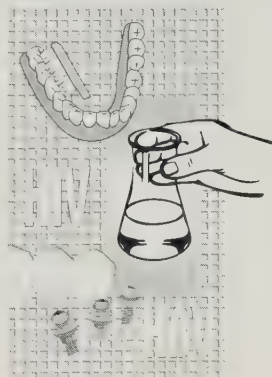
References

1. Miles, D.A., Van Dis, M.L. and Razmus, T.R. *Basic Principles of Oral and Maxillofacial Radiology*, 1992, W.B. Saunders Co., Philadelphia, p. 186.
2. *Charge-Coupled Devices for Quantitative Electronic Imaging*, Photometric Ltd., 1991, Tuscon, Ariz.
3. Miles, D.A. Imaging Using Solid-state Detectors *DCNA* 37(3): (in press), 1993.
4. Farman, A.G. and Farag, A.A. Telerradiology for Dentistry *DCNA* 37(3): (in press), 1993.
5. Mol, A. *Computer-aided Diagnosis of Periapical Bone Lesions: An Application of Digital Image Analysis in Dental Radiology (thesis)*. 1992, Drukkerij Elinkwijk bv, Utrecht, The Netherlands.

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FEATURE



Socialized Dentistry for Children in Saskatchewan Its beginning – 1974 Its demise – 1993

Jack W. Niedermayer, BA, DDS

Introduction

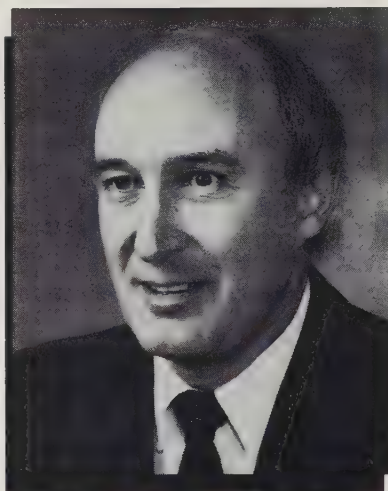
Demographically, Saskatchewan is a large, sparsely-populated (less than one-million residents) province in the centre of Western Canada. Its economy is largely agricultural, with little industrial activity, and its population is spread out over the southern two-thirds of its area.

Saskatchewan's demographics make the delivery of health care in the province somewhat difficult. In addition, its fluctuating economy makes health and dental care less accessible and less affordable than in most other areas of Canada.

In Canada, Saskatchewan is recognized as the birthplace of universal medicare. That landmark occurred in 1962, when Premier T.C. (Tommy) Douglas's NDP government pioneered Canada's first universal medical care plan. It is not difficult, then, to imagine that the same government, given its philosophy of providing people with social programs, would also consider establishing some form of socialized dentistry.

Background

In 1968, the Saskatchewan Department of Health conducted surveys in Regina and Saskatoon that showed the level of dental health of children in these cities was far from satisfactory. It was reasonable to assume, given the province's



Jack W. Niedermayer, BA, DDS

demographics, that the level of dental health in the rural areas was not much better or even worse. At that time, Saskatchewan was experiencing a shortage of dentists, and most rural towns and villages did not have easy access to dental treatment. The lack of a dental school at the University of Saskatchewan was also a contributing factor to the poor dental manpower situation.

The Oxbow Pilot Project

On the basis of the 1968 survey results, the dental division of the Department of Health proposed that the federal government allocate funds for a pilot dental project in the province. The project, as envisioned by the Department of Health, was to provide dental

health education, preventive services and treatment services to children using a dental team approach. Teams would consist of a dentist, two dental therapists (originally called dental nurses), three dental assistants and one receptionist.

This model was adopted from New Zealand's dental plan for children, which had been operating in that country for some time. Eventually, a pilot project was developed in Saskatchewan, and dental services were made available to children three to 12 years of age in the town of Oxbow, which is located in southeastern Saskatchewan. The dental team was housed in a mobile clinic equipped with the latest in dental equipment. This pilot project lasted for three years. Based on the project, it was deemed that quality care could be provided by such a program, and parents would enrol their children in a dental program in which treatment was provided by paraprofessionals, namely dental therapists.

The Beginning

On the basis of the Oxbow pilot project, the Saskatchewan government announced in March 1972 that a province-wide, school-based dental program would be established to provide comprehensive care to children between the ages of three and 12. The program actually began in September 1974. With the cooperation of the Department of Education and local

school boards, dental clinics were located in schools to make access more convenient for children and parents. By August 1982 there were 526 permanent dental clinics located in schools throughout Saskatchewan and serving approximately 155,000 children.

The Dental Therapist/ Dental Assistant Training Centre

In order to staff the dental plan, the Saskatchewan government constructed a dental therapist/dental assistant training centre at the Wascana Institute of Applied Arts and Science, which is adjacent to Regina's General Hospital. Dental therapists in Saskatchewan were required to be graduates of a two-year training course. Students were taught how to diagnose tooth decay and restore primary and permanent teeth with silver amalgam and composite filling materials. They were also trained to place stainless steel crowns and space maintainers, and to perform pulp-tomies and extractions of primary teeth.

Certified dental assistants were also trained at the centre, but were only required to be graduates of a one-year course.

Saskatchewan also employed a number of supervising dentists to perform a variety of duties in close cooperation with its dental therapist teams. At the beginning of the plan, the majority of local dentists declined the province's offer of employment, and most supervising dentists were actually recruited from the United States. To facilitate this recruitment, Saskatchewan did not require U.S. dentists to write entrance exams, although this is not true today.

Over the years, as the plan progressed, less supervision was undertaken due to the large number of dental teams in the province and the large areas they covered. This made it virtually impossible to make a dentist available on site.

Adolescent Dental Care – Expansion of the Plan

As originally established, the children's dental plan was intended to cover children between

the ages of five and 12. However, the plan was subsequently extended to include children of up to 17 years of age. In effect, the College of Dental Surgeons of Saskatchewan, in cooperation with the Saskatchewan government, agreed to provide dental treatment for children 14 years of age and over who were enrolled in the plan. The treatment was to be provided in private dental offices, as it was believed this would develop a bridge from the school-based plan to the dentist in general practice.

Consequently, in the 1981-82 school year, 43 per cent of the children enrolled in the dental plan were transferred to private dental offices. All services were to be provided at no charge to the parents. In turn, based on an agreement between the College of Dental Surgeons of Saskatchewan and participating dental practitioners, dentists were paid on a fee-for-service basis in accordance with a payment schedule established by the college.

Transfer of the Entire School-Based Dental Program to the Private Sector — September 1987

After the 1984 election, a Conservative government came to power in Saskatchewan. In June 1987, the new government announced that the school-based dental program would be dismantled and transferred to the private sector. The College of Dental Surgeons of Saskatchewan subsequently entered into an agreement with the government and participating dentists to transfer all children in the program to private dental offices for treatment on a fee for service basis. The government also cut back the program, by restricting its availability to children from five to 13 years of age. Adolescents were no longer eligible to participate.

This decision resulted in the closure of all the school-based clinics that had been established throughout the province under the NDP, and put some 400 dental therapists and dental assistants out of work. (Some of these individuals were eventually employed in the private

sector). It is estimated that the changes in the dental program saved the government around \$5 million.

As a result of the change of focus in Saskatchewan's dental plan, the training program for dental therapists was also closed. The training centre continues to train dental assistants, however, and now offers a two-year dental hygiene program, which originally retrained dental therapists to become dental hygienists.

At the outset of the switch over, the opposition in the legislative assembly, the employees of the plan and some parents became outraged at the transfer of the school-based plan to the private sector. It meant that parents had to become more involved in the plan, and personally take their children to dental offices for treatment. Dental therapists who were employed by the Saskatchewan government as well as members of the Saskatchewan Government Employees Union were also disgruntled. They brought a law suit against the College of Dental Surgeons of Saskatchewan, alleging wrong-doings in obtaining the dental plan for the private sector (the suit was eventually lost in the Saskatchewan Court of Appeal).

The Children's Dental Plan's Demise – June 1993

As Saskatchewan's economy headed for a drastic downturn in the late 1980s and early 1990s, all social programs became subject to government scrutiny. On March 18, 1993, the newly-elected NDP government announced that it was ending all funding of the children's dental plan, with service to end June 30.

The total cost of the treatment provided under the children's dental health plan from September 1, 1991 - August 31, 1992, was slightly over \$10 million. In terminating the plan, the government indicated that it had established several priorities for future dental programs. The first is to ensure that children of low-income families receive preventive and treatment services. In effect, the dental health education function will target areas

The First Oral Cancer



OraScan

CDA Board Approves New Fluoride Policy

CDA's board of governors has reaffirmed its support for the fluoridation of municipal water supplies.

During its May 1 interim meeting, the board passed a resolution to support the "fluoridation of municipal water supplies as a safe, economical and effective means of preventing dental caries in all age groups." The resolution also stated that: "fluoride levels in community water supplies should be monitored and adjusted to ensure consistency in concentrations and avoid fluctuations."

In the same resolution, the board voted in favor of a series of revisions to CDA's policy on fluorides. The revisions, formulated by CDA's committee on community and institutional dentistry, were based on the recommendations emanating from the Canadian Conference on the Evaluation of Current Recommendations Concerning Fluorides (See: Fluoride Recommendations Released. News Update. *J Can Dent Assoc* 59:330-336, 1993). CDA's fluoride policy now states:

Policy on Fluoride Supplementation

The Canadian Dental Association continues to support

the use of fluorides in the prevention of dental caries as one of the most successful preventive health measures in the history of health care.

The availability of fluorides from a variety of sources, however, is a current reality which the practising dentist needs to

take into account in dealing with patients. This is particularly true of children under the age of six, where exposure to more fluoride than is required simply to prevent dental caries can cause dental fluorosis. There is no evidence of any health problems being created

by such exposure, but it is prudent to attempt to limit exposure to the optimal levels required for continuing protection. Current levels of fluoride intake from all sources are difficult to establish for any given area, but the dentist should consider general intake, to the extent possible, in recommending fluoride supplementation. The following general guidelines are consistent with these principles:

1. Fluoride supplementation may be recommended only for individuals or groups at high risk to dental caries where the estimation of the mean fluoride ingested from all sources indicates a need.



CANADIAN DENTAL ASSOCIATION / L'ASSOCIATION DENTAIRE CANADIENNE

COMMUNIQUE

A CDA MEMBER SERVICE / UN SERVICE AUX MEMBRES DE L'ADC

JUNE 1993

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Board of Governors....

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Fluoride Supplement Doses For Individuals or Groups At High Risk to Dental Caries Based On Fluoride Level In the Water Supply

Dosage of Daily Supplement		
Age of Child	Fluoride in Water Supply < 0.3 ppm (mg/L)	Fluoride in Water Supply ≥ 0.3 ppm (mg/L)
< 3	not recommended	not recommended
3,4,5 years	0.25 mg (0.5 mg if no regular use of fluoridated toothpaste)	not recommended
6-13 years	1.0 mg	not recommended

2. The estimation of the mean fluoride ingestion from all sources should include all home and child care water sources and the possible impact of fluoride-reducing factors such as the use of water filtration devices within the home.

3. Fluoride supplementation dosages for individuals or groups at high risk to dental caries is based on the age of the individual and the fluoride level of their water supply.

4. Chewable tablets or lozenges are the preferred forms of fluoride supplementation. Drops may be required for special care patients.

In all, the CDA board reviewed 33 resolutions at its interim meeting, and heard the reports of 11 committees, two councils, three specialty sections and six other dental organizations.

Among other initiatives, the board voted to establish an ad hoc committee to deal with membership concerns. The committee will look at ways and means of obtaining financial compensation from nonmember dentists who benefit from CDA's activities in behalf of the profes-

sion. It will also review the association's current fee structure for individual members, corporate members and corporate bodies.

At the same time, the board recommended moderate fee increases for 1994. In consultation with the corporate bodies, CDA will increase membership fees by \$3, from \$12 to \$15, annually, and licensing body fees will increase from \$20 to \$22. The annual dues for active membership will also increase in 1994, from \$410 to \$425.

In addition to debating resolutions, the board considered a number of information items that were brought forward by CDA's various committees. Of particular note was the taxation committee's report, which related a number of concerns with regards to the employment status of dental associates.

Revenue Canada Classifies Dental Associates as Employees

In its report, CDA's taxation committee indicated that two situations have arisen where den-

tal associates working in a dental practice or clinic have been classified as employees rather than independent contractors (i.e. self-employed individuals). One such ruling was issued by Revenue Canada. The other was made by a labor standards officer.

When an associate loses his or her self-employed status, his or her monthly compensation is treated as personal income, which significantly reduces the number of tax deductions available to that individual. The employer (i.e. the primary dentist or clinic) is required to deduct Canada Pension Plan (CPP), unemployment insurance (UIC) contributions and federal income tax from the associate's wages. These deductions, along with the employer's required contributions to CPP and UIC, must then be submitted to Revenue Canada.

This results in the associate losing his or her eligibility for a number of tax deductions, and an increase in operating costs for the primary dentist/clinic.

Revenue Canada determines the employment status of associates based on certain factors found in the associate agreement and/or the workplace. When these factors are similar to the factors that typically exist within an employee-employer relationship, and very few factors indicate self-employment, Revenue Canada will likely classify the dental associate as an employee.

The existence of an agreement between the primary dentist and the associate dentist is an important element in proving the self-employed status of the associate dentist. However, this agreement must contain factors related to self-employment. In ef-

...Continued on page 3

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Board of Governors.... (Continued from page 2)

sociate has a degree of control in the practice, and that he or she has assumed some of the risk.

Employed Spouse Refused UIC Maternity Leave Benefit

CDA's taxation committee is also monitoring Revenue Canada's recent actions in regards to the UIC status of spouses who work for their husband or wife.

Revenue Canada recently disallowed a UIC maternity leave benefit claimed by a spouse who was working as a bookkeeper in her husband's dental office. Information obtained by the taxation committee indicates that the employee (wife) and the employer (husband) have paid UIC



contributions for over four years. The wife had received a UIC maternity leave benefit in 1990, but was refused the same benefit in November 1992.

In effect, Revenue Canada ruled that the employee-employer relationship was not at "arms length," and that the hourly rate (wages) paid by the husband was excessive.

The taxation committee disagrees with Revenue Canada's ruling. Spouses working in dental

practices are certainly not working at "arms length" from their partners, but the Income Tax Act states that self-employed professionals can employ their spouses. In addition, the wage paid by the husband to his wife, \$22 per hour, is certainly not excessive for a qualified bookkeeper.

If Revenue Canada's decision is upheld in the appeals process, and it is deemed that a spouse's work does not qualify as "insurable income," spouses or family members would not be required to make UIC contributions. It is unclear if their wages would be accepted as deductible expenses.

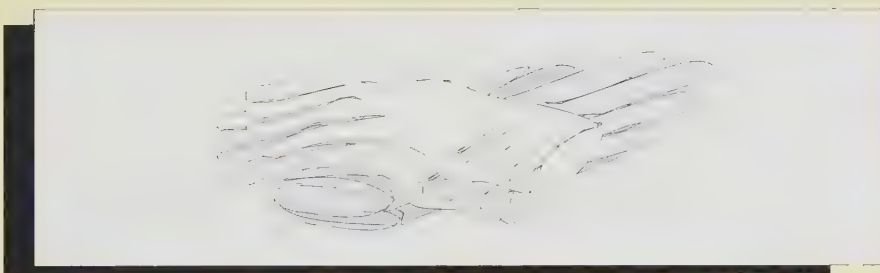
The taxation committee is monitoring both the dental associate employment status and the spousal UIC benefits issues closely. Developments will be reported to CDA members in upcoming issues of *Communiqué*. ■

Are Latex Gloves Safe?

A new study estimates that as many as five to 10 per cent of North American health care workers could be sensitive to latex, a condition that affects just one per cent of the general population.

According to the study, which was highlighted in a March 19 press release issued by the Academy of General Dentistry, Latex gloves contain many chemical additives, including accelerators, organic compounds, and starch powders. In addition, naturally-occurring proteins derived from the sap of the rubber tree (*Hevea brasiliensis*) are present in latex products.

Reactions to latex include swelling and redness of the skin, which may become cracked, itchy, and dry. This reaction can take up to two days to develop. More severe reactions have been documented since 1979. They generally take place within seconds to minutes after exposure, and appear to be caused by the proteins found in natural rubber latex. Symptoms include hives, wheezing, runny nose, and



itchy eyes. In some cases, these reactions can cause life-threatening anaphylaxis.

In an alert on medical devices that appeared in the *Canadian Journal of Infection Control* (Vol. 6, No. 4, Winter 1991), Health and Welfare Canada advised health care professionals to identify latex-sensitive patients and be prepared to treat allergic reactions by following these recommendations:

- acquire information about latex sensitivity when taking a patient history (potential symptoms include itching, rash, breathing difficulties, etc, when wearing rubber gloves to perform household chores or when inflating balloons)
- use alternative materials such

as plastic, where possible, whenever latex sensitivity is suspected or has been confirmed

- alert hospital (or dental office) personnel to the potential for latex reactions to occur, and establish procedures to follow for the various types of possible reactions
- encourage latex sensitive patients to advise all health care professionals of their latex sensitivity.

The CDA Library has developed a Package Library containing 18 separate articles on latex allergy. This package may be ordered by CDA members for \$5 plus applicable taxes by calling the library at: 1-800-267-6354, extension 223. ■

AGD Approves CDA Sponsored Continuing Education Programs

Dentists participating in CDA-sponsored continuing education courses can now earn fellowship or mastership credits from the Academy of General Dentistry (AGD).

AGD's continuing education committee has approved CDA's application to have its continuing education programs recognized under the academy's National Sponsorship Approval Program. The approval is good for four years.

AGD, which has a total membership in excess of 33,000 dentists in United States and Canada, maintains its National Sponsorship Approval Program to help its members to identify and participate in quality continuing dental education courses.

Mandatory Membership in Question

In the past, only members of either the American Dental Association (ADA) or CDA could belong to AGD. This requirement may be put in jeopardy at AGD's house of delegates meeting in July, however.

AGD, like many other volunteer organizations, has experienced a drop in membership during the current recession. Some dentists are declining to join their national associations, or are opting to join CDA or ADA, but foregoing AGD membership. It has been reported that the academy is losing up to 600 potential members per year because of its ADA/CDA membership requirement.

In an April 26 letter, CDA president Dr. Bernie Dolansky outlined his concerns on the membership issue to Dr. Paul Stephens, AGD's president:

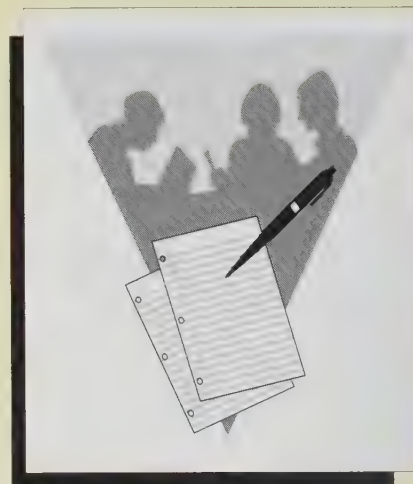
On behalf of the Canadian Dental Association, I would like to express my concerns to the AGD board of trustees with respect to the possibility of AGD ceasing to require ADA\CDA\NDA mem-

bership as a prerequisite to joining the Academy of General Dentistry.

The Academy of General Dentistry shares a fundamental objective with the American Dental Association and the Canadian Dental Association to support the interests of general dentists and general dentistry. While CDA's mandate extends beyond general dentistry to include specialists and allied dental personal, a great deal of our time, energy and resources are devoted to general dentistry.

Most dentists recognize that membership in ADA or CDA is part of their commitment to the dental health profession, just as membership in the Academy of General Dentistry reflects a specific commitment to continuing education in general dentistry.

To revoke the ADA\CDA\NDA membership requirement would certainly be the first step on a path leading to a competitive, rather than a collaborative and supportive relationship between CDA\ADA and the AGD.



Such a development would unquestionably weaken the mutually supportive and beneficial relationship which currently exists.

I also question whether both the public and nonmember dentists would be better served by this change. Although suggested in the AGD *Impact* of February 1993, eliminating certain AGD membership requirements will not necessarily result in greater membership support and, in fact, may lead to an erosion in each one of the dental health organizations involved, which will only ultimately harm the profession and the public we serve. I ask you to seriously consider this decision at your July house of delegates meeting. ■

**Percentage of Dentists on CDAnet in Canada
By Province (As of May 5, 1993)**

	Licensed Dentists	Dentists on CDAnet	Percentage
Newfoundland	146	20	14%
Prince Edward Island	47	1	2%
New Brunswick	239	12	5%
Nova Scotia	439	34	8%
Quebec	3,460	90	3%
Ontario	5,983	874	15%
Manitoba	504	110	22%
Saskatchewan	338	28	8%
Alberta	1,386	184	13%
British Columbia	2,084	196	9%
Northwest Territories	22	6	27%
Yukon	13	0	0%

CDA Supports Stricter Tobacco Control Regulations

CDA, as part of its continuing efforts to promote stricter tobacco products regulations, has written to the federal environmental health directorate to voice its concerns over a proposed amendment to the Tobacco Products Control Regulations. In his April 16 letter to Mr. Dean Correll, chief of legislative and regulatory processes, environmental health directorate, CDA president Dr. Bernard Dolansky said:

"I am writing on behalf of the Canadian Dental Association concerning an amendment to the Tobacco Products Control Regulations, as presented in the Canada Gazette Part 1 on March 20, 1993.



In essence, CDA, representing approximately 11,000 Canadian dentists, supports the submission put forth by the Canadian Council on Smoking and Health in its

letter of April 15, 1993.

The concerns of the dental profession in Canada on the devastating effects of tobacco products on oral health have been expressed formally to Health & Welfare Canada through the CDA and are a matter of record. Strong regulations, free of "loop-holes" and with revision for enforcement are long overdue.

The proposed amendments are evidence of the Canadian government's commitment to communicate to current and potential users the life-threatening consequences of the use of tobacco products. CDA believes that the submission of the Canadian Council on Smoking and Health adds strength to this purpose. ■

LETTERS TO THE EDITOR

Alternate Benefit Clause

The article on the alternate benefit clause (ABC) that appeared in the April 1993 issue of *Communiqué* (Alternate Benefit Clause Controversy, p. 6) presented a rather one-sided look at an issue that has been a thorn in the dental profession's side for quite a long time. This clause would appear to have been devised by the insurance industry as an escape clause and disguised as a cost control measure.

I have no argument with Dr. Mazak's statement that "professional dental concepts of ideal treatment and dental insurance plan liabilities are not necessarily the same!" The controversy is not about ideal treatment, but rather what it means to restore a tooth or teeth – to quote the language of some dental contracts, "satisfactorily" – and where the responsibility lies in determining whether a "tooth can be restored with conventional material such as amalgam or composite..."

The insurance industry has

never shown by any statistical analysis that the ABC reduces costs to the plan purchaser or sponsor. The obvious cost reduction (obtained) in covering the least expensive means of treatment may well be more than made up by the additional costs of administering the nuances created by this clause.

I fail to see why the Canadian Association of Dental Consultants supports this type of clause. There are no guidelines within the insurance industry for applying the clause other than the generalities of the dental contract, as Dr. Mazak stated in his editorial. Why would any dental consultant want to assume the responsibility of having to judge the appropriateness of any type of dental treatment without access to any diagnostic tool other than perhaps a few radiographs?

Are we to assume from Dr. Mazak's editorial that the comments from "aggravated dentists" are never warranted and do not reflect legitimate concerns

based on sound clinical judgment. What does it mean to restore an arch satisfactorily? Is it to the satisfaction of the patient, the dentist rendering the treatment, the insurance company or the dental consultant? While the insurance industry may have the luxury to base most of its decisions on financial considerations, the dental profession, including dental consultants, has the responsibility to render treatment based on sound clinical judgment. Sure it is also the responsibility of the dental consultants to look beyond the perception that all their colleagues are trying to beat the system.

In order to properly apply the alternate benefit clause, dental consultants would have to examine every patient and assess the situation as if they were dealing with one of their own patients. Of course this would be totally impractical, just as the alternate benefit clause is impractical. This clause requires a subjective interpretation without possession of all the facts.

It does not appear that endorsing the principles of an alternate benefit clause fits the Canadian Association of Dental Consultants' goals to "better serve the best interests of dentistry." ■

Luc Dugal, DMD Chairman,
CDA Third Party Dental Plans Committee

Chalk CDA/Crest's Egg-Speriment Up As a Winner.



Sandra Facca asks her students questions on the CDA/Crest egg-speriment to test their knowledge about brushing and fluoride. She is holding one of the class's two eggs, which is half submerged in a beaker of Crest toothpaste.

If the answers given by a grade-two class in Toronto last April are any indication, the CDA/Crest egg-speriment program has more than met its objective of teaching children about the value of brushing their teeth on a regular basis.

Students in Sandra Facca's class at St. Francis de Sales School in Toronto completed the egg-speriment last April, during Dental Health Month. In a question and answer session conducted on the last day of the egg-speriment, the children were not only able to identify fluoride as the toothpaste ingredient that protects teeth from decay, they also named acid and sugar as two important causes of dental caries.

"Anything they're really interested in and eager to participate in, hands on, they learn," said Miss Facca.

Most of her students had seen the egg-speriment advertised on television, which may have helped spark their interest in the program. In addition, Miss Facca was taking her class through a health segment when she be-

came aware of the egg-speriment, and it was easy to integrate the program into the students' curriculum.

"They loved it," she said. "When I first talked about it, a lot

of the children said, 'Hey, I saw that on TV.'"

Although a hygienist visits St. Frances de Sales on a yearly basis to talk about oral health, it is the first time Miss Facca has conducted a Dental Health Month project with her students. Based on the success of the egg-speriment, however, she's likely to integrate oral health into her classes more often — particularly in April.

Information on the CDA/Crest egg-speriment was sent to 9,000 elementary school teachers across Canada last March. Teachers were asked to mark one side of an egg with an X and coat the other side of the egg with Crest toothpaste. The egg was then placed in a weak acid solution (vinegar) and left there for several hours. When the egg was removed from the solution, the side that had been coated with Crest was hard and strong, while the uncoated side was soft and weak.

The idea behind the egg-speriment was to create a visual image for children of how the acid in their mouths can cause their teeth to decay, and how regular brushing can protect their teeth and keep them strong. ■



Andrea Clemente washes the excess toothpaste off the egg prior to immersing it in a solution of vinegar, while teaching assistant Rosemary Giurleo looks on.

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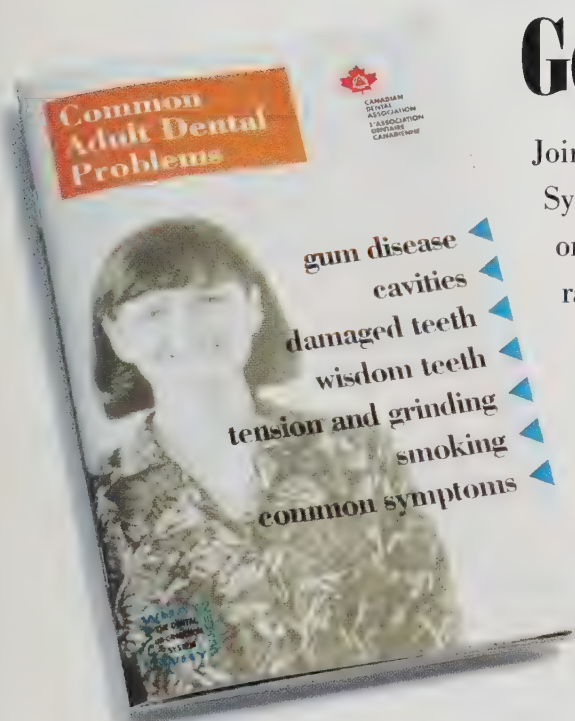
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CDA – Meeting Your Patient Education Needs

Canadian dentists are serious about their commitment to educate

the public on dental health. Providing clear, concise reading and display materials to support this education initiative is a priority for CDA. To this end, the association developed a new line of patient information materials in 1991.

Called the Dental Information System (DIS), CDA's new line of educational pamphlets covers a wide spectrum of topics, which are presented in a visually-pleasing, easy to read format. The series includes eight titles, and each booklet covers a variety of related topics. For example, the booklet called "Common Adult Dental Problems" covers gum disease, cavities, damaged teeth, wisdom teeth and other topics of concern to the majority of adults.

The DIS system has been well received by dental professionals and patients alike. Extensive research went into the development of the booklets. Following their publication, CDA conducted surveys to determine the booklets' effectiveness in spreading the dental health message. Selected dental offices and health units across Canada were contacted by telephone to obtain comments and criticism on the system. For the most part, these comments were highly favorable. Users liked the modern format and the informative text of the booklets.

A second survey was mailed to a wider range of dental offices, which offered participants the

CDA's DIS initiative has received generous support from Colgate-Palmolive, which has contributed close to \$500,000 to research and develop the program. This has allowed CDA to offer the brochures to dentists at a substantially reduced rate.

CDA invites dental professionals who did not participate in the original surveys to forward us their comments on DIS. With valuable input from you and generous corporate support

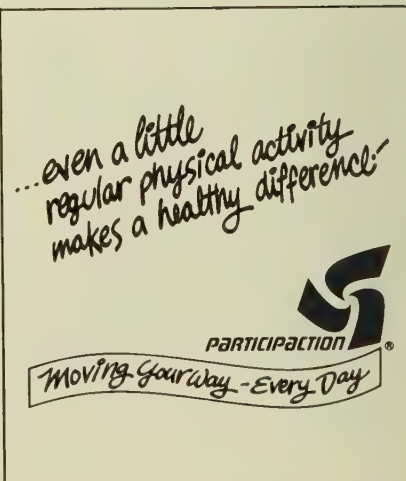
from companies like Colgate, CDA looks forward to providing dental offices with timely, accurate information today and in the future. ■



chance to win a \$200 voucher for DIS products. Dr. Patrick Powers of St. Catharines, Ontario, was the lucky winner.

Based on the results obtained in the mail survey, CDA believes that it would be appropriate to develop a companion series to the DIS system. Several dentists requested single-topic booklets containing more photographs. CDA will begin development of this series in the near future. In addition, other brochures will be added to CDA's dental education materials to address topics not covered by DIS.

Developing brochures is expensive, however. Research needs to be done to determine the topics that would be of the most benefit to both dentists and patients. The text must then be written, edited and scientifically reviewed. Next, design and marketing strategies must be laid out and tested.



Dealing With the Family Cottage

by Robert H.L. Innes, CA

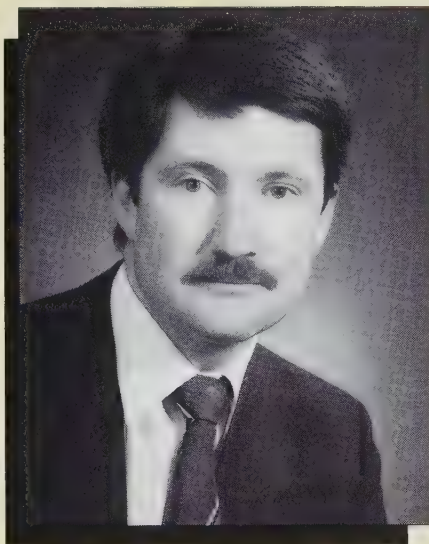
Unfortunately, one of the most pleasant family assets, the family cottage (or winter home), can also be the greatest source of headaches. This, in turn, has led to it being the subject of many of the questions asked by our clients.

For most cottage owners, the biggest concern is usually tax related, and with good reason. In recent years, the family-owned cottage seems to have increased the most in value relative to other assets, and it is not unusual for cottages to sell for hundreds of thousands of dollars.

The tax consequences can be alarming. If you have actually sold the cottage, thereby converting this asset to cash, there may not be a significant problem. But if the cottage has been bequeathed or gifted to a family member, there may be a real concern if taxes are due on the home and no cash is available to pay them. In addition, there may be probate fees payable on the cottage. While it can be left to your spouse without incurring capital gains tax, the same does not apply if the cottage is left to your children. In fact, children are often forced to sell the family cottage in order to satisfy Revenue Canada.

Generally, a cottage will be subject to capital gains taxation if the proceeds from the sale of the home exceed the tax cost base. Part or all of the gain may be exempted through either the principal residence exemption or the capital gains exemption.

The principal residence exemption (PRE) may be available if you have not used your PRE to exempt another gain on, for example, your family home. Even if you have, you may nevertheless be able to exempt part of the capital gain with your remaining PRE. Note that for capital gains purposes, there is a valuation day



Robert H.L. Innes

at December 31, 1971, for properties owned prior to that date. Capital improvements may also be added to the tax cost base.

Prior to December 31, 1981, it was possible for a married couple to designate two properties as their principal residences, provided that one was owned in the name of the husband and one in the name of the wife. For couples in that situation, December 31, 1981, becomes a second valuation day (as if things were not confusing enough).

Until March 1992, the capital gains exemption (CGE) was available on real estate sales. But after February 1992, in most cases dealing with real estate, the CGE was made available only on a prorated basis. In effect, the longer a property is held after February, 1992, the smaller the available CGE. For this reason, you may want to consider selling the property or transferring it to a trust now, as opposed to later, in order to trigger the utilization of your \$100,000 lifetime CGE.

As an aside, one exception to the new rules provides that a property used in your professional practice will continue to be eligi-

ble for the CGE. This could also apply to an interest in a partnership property. Unfortunately, one of the variables which no one can assess with any degree of confidence is whether the government will eliminate the CGE completely. The only certainty is that governments change their focus and their minds. Therefore, the best advice we can give anyone, we think, is to take your CGE while it is available if you are in a position to do so. It is worth at least \$100,000 in tax savings per couple, which equals \$200,000 in income and therefore \$500,000 to \$600,000 in billings. Think of it, a year's work may be at risk simply because the government changed its mind.

If the 'cottage' happens to be a winter home in Florida or some other U.S. state, you could also be faced with U.S. or state estate tax. If you own or are thinking about buying a property in a foreign jurisdiction, and you have not consulted with a professional about the applicable taxes in that jurisdiction, we recommend you do so. There may be a number of considerations. For example, should title be held jointly, as tenants in common or in joint tenancy, or perhaps by a corporation? Secondly, it may be important to reduce the equity with a mortgage in order to reduce the value for estate tax purposes.

Taxes aside, the cottage is often a source of family problems when left to more than one child. Invariably, with families being spread out more and more geographically (and economically), dealing with the maintenance and use of the cottage can be a source of family friction.

There are a number of options you can consider. You can decree in your will that, on your death, the cottage be sold with a right of first refusal to the children. There should be an independent appraisal made of the property. If two or more of the

children wish to buy it, they may have to draw lots unless they wish to buy it jointly. Unfortunately, they may not be able to afford the cottage unless there is sufficient cash in the estate to meet this need. This could provide another use for the life insurance in your estate.

You could also establish a trust to hold the property for the common use of your children. In this case, it is very important to provide explicit instructions concerning payment of the common costs, the sharing of these costs, and the term of the trust, etc. If your instructions are not sufficiently clear, your trustees could find themselves in court for instructions.

We recommend that you enjoy your cottage, keep good records of expenditures (as they may be relevant for tax purposes), consider life insurance where it may solve some family liquidity problems, and give some serious thought to what you will do with the cottage when the time comes. Finally, the taxation on a cottage can be complicated, and we recommend that you review the matter with your financial advisor if you have any doubts about what's involved. ■

Robert H.L. Innes, HBA, LLB, CA has his own chartered accounting firm in London, Ontario, specializing in providing auditing, accounting, taxation and computer services to small- and medium-sized businesses, professionals and not-for-profit organizations.



CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	April 30, 1993	March 26, 1993	
Bond & Mortgage Fund	104.69725	103.99854	13.9%
Common Stock Fund	20.51529	19.70999	17.4%
Money Market Fund	64.06412	63.74508	6.1%
Balanced Fund	38.85352	38.25277	11.4%

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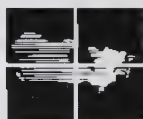
Term	April 30, 1993	March 26, 1993
1 yr	5.60%	5.85%
2 yr	6.10%	6.35%
3 yr	6.35%	6.60%
4 yr	7.10%	7.10%
5 yr	7.15%	7.35%

(*Rates subject to change without notice.)

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Gingival Enhancement/Root Coverage

C.G. Ibbott DMD, FRCD(C)

L.D. Carlson-Mann SDT, RDH

ABSTRACT

The clinical results obtainable with gingival augmentation/root coverage, using pedicle flaps, free-gingival auto grafts and connective tissue grafts, are discussed.

In the 1960s, papers were published by Nabors and Sullivan and Atkins¹ describing the principles of successful grafting. This author had the opportunity to publish a paper in the *CDA Journal* in 1970, which outlined some of the applications for free gingival grafts. Since that time, a scientific rationale has been established for augmentation/grafting. In the early 1970s, Karring et al¹ published a series of papers showing that tissue characteristics are genetically determined. They demonstrated that not only was the integrity of transferred tissue maintained, but it was actually the connective tissue that had the code or capability of telling the epithelium to keratinize.

A multitude of studies have been done to determine the need for attached gingiva. Lang and Loe¹ felt at least 2.0 mm of attached gingiva was needed for tissue health. Krigger and Egelbeg¹ showed the gingival response to plaque was the same at attached and unattached sites. Kennedy¹ found, however, that in patients with poor home care and irregular maintenance, there was more inflammation and attachment loss in non-grafted versus grafted sites. The key seems to be ongoing evaluation, with intervention when recession is found to be progressive and when inflammation, discomfort and esthetic problems are noted. Grupe, Caffessee, McFall, Robinson¹ and others have shown successful root coverage



Fig. 1: Left (Top and bottom), Case 1. Right (Top and bottom), Case 2.



Fig. 2: Left (Top and bottom), Case 3. Right (Top and bottom), Case 4.

with various pedicle flaps. Miller,² Holbrook and Oschenbein,³ Borghetti and Gardella,⁶ and Ibbott and Oles⁷ have demonstrated that root coverage can be accomplished with free gingival autografts. Langer, Edel, Nelson,

Becker, Harris^{4,5,9} and others have shown the efficacy of using connective tissue grafts for root coverage. These grafts include: pedicle flap (P) graft (transposing tissue from donor to recipient site); free-gingival auto (FGA) graft



Fig. 3: Left (Top and bottom), Case 5. Right (Top and bottom), Case 6.



Fig. 4: Left (Top and bottom), Case 7. Right (Top and bottom), Case 8.

(moving a piece of epithelium or connective tissue from palate to recipient site); connective tissue graft (CTG) (removing connective tissue from the palate with a trap door approach to maintain an epithelial covering over the palatal donor site. Connective tissue at recipient site may be covered with a pedicle from that site). These three approaches all have advantages and disadvantages as well as common factors leading to success. Successful factors include:

1. Adequate interproximal bone and soft tissue height.
2. Roots that are planed to place them within or close to the alveo-

lar housing.

3. Adequate root planing.

4. A graft of adequate size with a connective tissue thickness of 1.0 - 1.5 mm.

Examples of the results obtainable with these techniques include: (See Table I)

The thicker keratinization of the palate gives a whiter tissue than the buccal mucosa as well as a keloid appearance. Pain is greatest with the FGA technique (Fig. 1) because of palatal denudation. In the CTG case (Fig. 2) there is minimal palatal denudation. Since the pedicle does not involve a second site, discomfort is usually minimal. It should be

TABLE I

Lower incisor area:	Case 1 (FGA)	Case 2 (P)	Case 3 (CTG)
Root coverage:	good	good	good
Tissue color:	fair	good	good
Tissue thickness:	too thick	good	good
Patient discomfort:	moderate	minimal	minimal - moderate

noted that a pedicle could not be used for cases 1 or 3 because of the absence of a suitable donor site. FGA or CTG could be used for case 1, 2 (Fig. 1) and 3. Case 4 (Fig. 3) illustrates how a restoration may be removed and the root covered.

TABLE II

	Case 5 (FGA) lower cuspid	Case 6 (P) upper cuspid	Case 7 (CTG) upper cuspid
Root coverage:	fair-good	good	good
Tissue color:	poor	good	good
Tissue thickness:	excessive	good	good
Patient discomfort:	severe	minimal	moderate

Case 3 looks best and is the least uncomfortable, but please note the 1.0 mm+ recession at donor site, which is characteristic for this procedure.

Case 8 (Fig. 4) shows how a crown margin can be covered. Case 9 (Fig. 5) shows coverage of a damaged incisor root. Case 10 (Fig. 5) shows the excellence of coverage, color and contour obtainable with connective tissue grafts. Cases 11 and 12 (Fig. 5) show the coverage of multiple roots. The pedicle procedure cannot be used for multiple recessions. While either the free-gingival autograft or connective tissue graft can be used for the coverage of multiple recessions, the blood supply is more favorable for the connective tissue graft (particularly when the Langer procedure is used), since

there is a double blood supply to the graft. The color blend and tissue shape is also better with the connective tissue graft as compared with the free-gingival auto graft.

Summary

The demand for cosmetic dentistry by the general public is increasing. The use of gingival enhancement/root coverage procedures are an important part of cosmetic dentistry.

Dr. Ibbott is a periodontist and maintains a private practice in Regina, Saskatchewan.

Ms. Carlson-Mann is a registered dental hygienist.

References

1. American Academy of Periodontology. *Proceedings of the World Workshop in Periodontics*. American Academy of Periodontology, Chicago, Ill., 1989.
2. Miller, P.D. Root coverage using the free tissue auto graft citric acid application. III. A successful and predictable procedure in deep-wide recession. *Int J Periodontics Restorative Dent* 1985; 5(2):15.
3. Holbrook, T. and Oschsenbein, C. Complete coverage of the denuded root surface with a one-stage gingival graft. *Int J Periodontics Restorative Dent* 3(3):9, 1983.
4. Langer, B. and Langer, L. Subepithelial connective tissue graft technique for root coverage. *J Periodontol* 56:715, 1985.
5. Nelson, S. The subpedicle connective tissue graft, a bilaminar reconstructive procedure for the coverage of denuded root surfaces. *J Periodontol* 58:95, 1987.
6. Borghetti, A. and Gardella, J. Thick gingival auto graft for the coverage

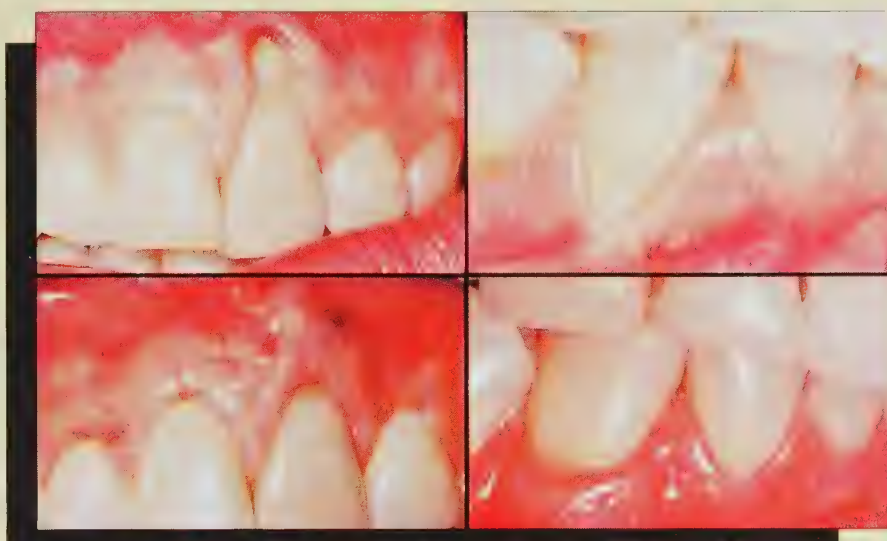


Fig. 5: Left (Top and bottom), Case 9. Right (Top and bottom), Case 10.



Fig. 6: Left (Top and bottom), Case 11. Right (Top and bottom), Case 12.

of gingival recession: A clinical evaluation. *Int J Periodontics Restorative Dent* 10:217, 1990.

7. Ibbott, C., Oles, R. and Lavery, W. Effects of citric acid on autogenous free graft coverage of localized recession. *J Periodontol* 56:662, 1985.

8. de Waal, H., Kon, S. and Ruben, M. The laterally positioned flap. *Dent Clin*

N Amer 32:267, 1988.

9. Edel, A. Clinical evaluation of free connective tissue grafts used to increase the width of keratinized gingiva. *J Clin Periodontol* 1:185, 1974.

10. Miller, P.D. A classification of marginal tissue recession. *Int J Periodontics Restorative Dent* 5(2):9, 1985.



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Dentition of a Late Roman Population From Halai, Greece

Greg A. Smith, B.Sc., DMD, MA

ABSTRACT

The archaeological uses of dentistry are discussed with particular reference to a group of late Roman skeletal remains from the Greek city of Halai. A preliminary field analysis of 107 recovered teeth gives evidence of a population with a high child mortality rate, low incidence of caries, some evidence of periodontal disease and significant amounts of dental attrition.

Dentistry has long had applications in areas beyond the purely clinical. Fields such as dental anthropology and skeletal/dental biology use dental evidence in the study of ancient populations. Dental anthropology is currently a major area of research involving such activities as the development and use of dental morphology for assessing population origins and relationships, the discovery of new dental marker traits, dental macroevolution, dental paleopathology, and dental genetics. Dentition has been used to assess such problems as Nubian population history;¹ the peopling of Africa;² Easter Island³ and the Pacific Rim;⁴ and has been instrumental in the study of many other areas.

Skeletal/dental biology, a related field, is frequently useful at archaeological sites where human skeletons are preserved long after the rest of the body has decomposed. These skeletons are often the only direct evidence we have of the people who actually created the sites. A basic knowledge of skeletal and dental anatomy makes it possible to distinguish between human and animal remains and to identify specific bones and teeth, or fragments thereof. Skeletal/dental traits are also used to deter-



The author examines the entrance of the tomb at Halai, prior to the excavation of the entrance chamber.

mine the sex of individuals and their age at death, which makes it possible to reconstruct the demographics of ancient populations. Skeletal/dental traits can also be used to determine how various populations relate to one another genetically, and to determine the health status of ancient populations.

Not all archaeological sites contain relevant skeletal remains, however. I have been fortunate, as both a dentist and a classical archaeologist, to have done field work at several sites in the Aegean that were rich in skeletal remains. The most recent of these was Halai, where I participated in an excavation in the summer of 1992.

Halai is located in the town of Theologos on the eastern coast of the Greek mainland, 130 km north of Athens. The area was occupied from the early Neolithic period (6000 B.C.) well into the Roman and Byzantine eras. In the Greek period (about 600 - 31 B.C.) seaside Halai was a fortified acropolis with a temple, shops and civic buildings. During the

Late Roman/Byzantine period, a Christian church with fine mosaics was built near the site of the Greek temple. Originally excavated prior to the First World War and again in the 1930s by Hetty Goldman,⁵ the site has been further explored in the last several years by Professor John Coleman of Cornell University.⁶

During the 1992 field season, human remains were excavated from Neolithic-period deposits, including fragments of a child's mandible. The greatest concentration of human skeletal remains on the site, however, were discovered when a late Roman tomb was uncovered near the early Christian church.

The tomb, constructed of stone slabs that formed a peaked roof, was discovered several feet below the surface, adjacent to the main street of the ancient acropolis. It was entered from a small antechamber sealed with stone blocks. Once these were removed, the soil-filled entrance chamber was excavated. It yielded a cache of late Roman oil lamps, most of

them local copies of a North African type, and all in excellent condition. Over the next two weeks, the interior of the soil-filled tomb was excavated and the soil sieved through fine screens. A great many small bone fragments and teeth, all in very poor friable condition, were recovered in this way.

The excavated teeth were often fragmentary, and very few were associated with jaw bone fragments. A total of 107 teeth were examined including six primary teeth and two permanent incisors with incomplete root development. There was no obvious sign of caries in any of the teeth examined. Only 10 teeth were found intact within bone fragments, including two posterior mandible fragments containing seven teeth, which appeared to come from one individual. These showed no obvious pathology and no signs of bone loss. A third fragment – an anterior mandible fragment containing three incisors – was discovered in a different excavation unit within the tomb. These incisors exhibited a moderate degree of wear and 5.0 to 6.0 mm of horizontal bone loss. They were also coated with a considerable amount of 1,500-year-old calculus. Although the sample is small, it would appear that periodontal disease was no stranger to this group.

Most of the teeth showed signs of heavy occlusal wear. While this might indicate a relatively advanced age for these individuals, it is possible that a comparatively coarse diet contributed to a more rapid attrition of the dentition than we would see today, resulting in a worn dentition at a fairly early age.

While the age of the adults could not be directly determined from the dental remains, the six primary teeth and two partially-formed incisors allowed us to estimate the age of the children interred at the site. Five primary teeth consisting of three canines, an upper left first molar and an upper right lateral were found together with two permanent maxillary central incisors. These central incisors showed a root development that was around three-quarters complete and had mamellons with no evidence of

wear. It is reasonable that these may have come from one individual, and an age of eight or nine years seems likely.⁷

The remaining primary tooth, from a separate excavation unit that contained many adult teeth, was a lower right primary first molar. This tooth showed an incomplete root development, indicating a probable age of less than 2.5 years.⁸ This would indicate that at least two young children were buried here.

In order to make a rough estimate of the number of adults interred at the site on the basis of dental remains, all intact teeth were identified. The most numerous surviving teeth were the upper right molars, of which there were 12, and the lower right molars, of which there were 20. Although these could not be further differentiated into first and second molars, the samples did not contain any teeth that were obviously third molars. Using the lower right molars as a guide, it is probable that there were as many as 10 adults in the tomb and quite possibly several more. Further study of other skeletal remains, notably skull fragments and long bones, may yield more information, although these remains are very fragmentary. I noted obvious portions of only two sets of facial bones.

Aside from skeletal fragments, the tomb yielded a single gold earring, along with 16 pottery lamps decorated with Christian symbols. Most of these were local copies of a North African style of lamp that was popular in the late 5th and 6th centuries A.D. The disturbed nature of these finds may indicate that the tomb had been opened repeatedly prior to our excavation. The remains we unearthed may have been moved to the site from another location and then reburied in a bundle within the tomb, which may have been a family crypt. Older bundles might have been swept aside as new ones were placed. This type of reburial can result in the loss of important skeletal elements, particularly small bones and teeth.⁹ Further study of the lamps and other artifacts, as well as the nearby church, will help to date these burials, which are currently thought to be from the 5th

to 6th century A.D.

The late Roman remains found at Halai are beginning to give us a picture of a population that had a low incidence of dental caries, evidence of periodontal disease and significant dental attrition. In addition to the remains of the two children and 10 or more adults in the tomb, the presence of a nearby, single-burial child's grave would seem to indicate a relatively high child mortality. These findings are the result of a relatively brief study of remains in the field, as they were excavated. Along with cleaning and preservation, more intensive study of the Halai skeletal remains will provide a great deal more information on the site's late Roman inhabitants.

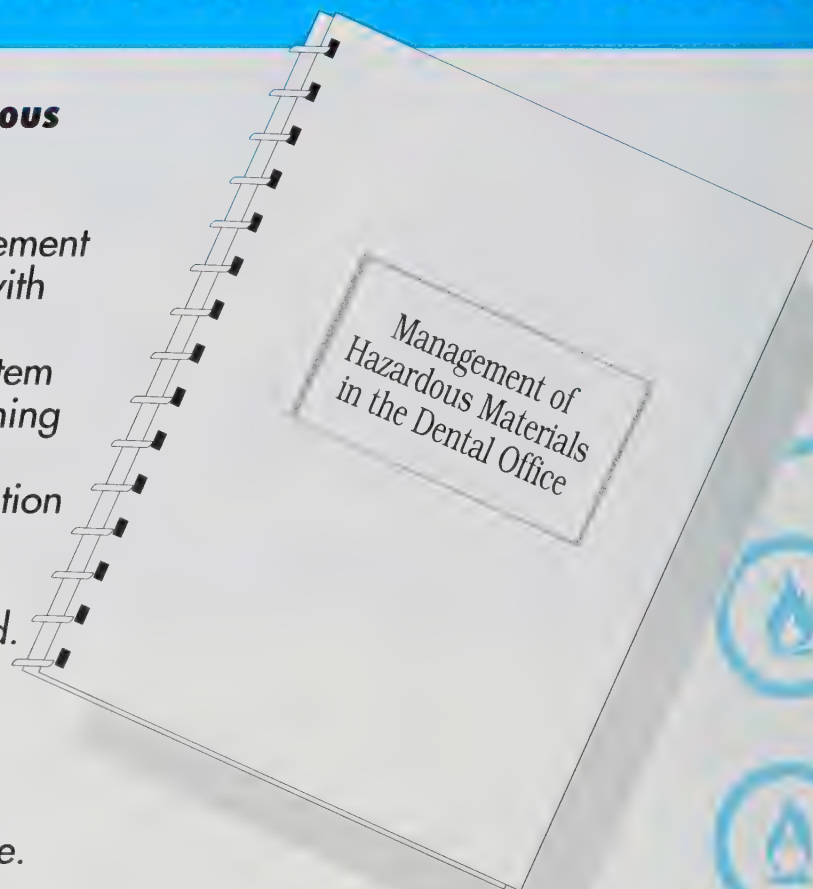
Dr. Smith is a part-time clinical faculty member in the dental hygiene department at Vancouver Community College. He recently received a degree in classical archaeology from the University of British Columbia, and has participated in several archaeological excavations.

References

1. Turner, C.G., II and Markowitz, M.A. Dental discontinuity between Late Pleistocene and recent Nubians. People of the Eurafian - South Asian triangle I. *Homo* 41(1):32-41, 1990.
2. Hiernaux, J. *The People of Africa*. New York, Charles Scribner's Sons, 1975.
3. Turner, C.G., II. Dentition of Easter Islanders. In: Dahlberg, A.A. and Graber, T.M. (eds). *Orofacial Growth and Development*. The Hague, Mouton, 229-249, 1977.
4. Turner, C.G., II. Dentochronological separation estimates for Pacific Rim Populations. *Science* 232:1140-1142, 1986.
5. Goldman, Hetty. The Acropolis of Halai. *Hesperia* 9:381-514, 1940.
6. Coleman, J.E. Excavations at Halai, 1990-91. *Hesperia* 61:265-290, 1992.
7. Logan, W.H.C. and Kronfeld, R. Chronology of the human dentition. In: McDonald, R.E. and Avery, D.R. (Eds). *Dentistry for the Child and Adolescent*. 1978, St. Louis, C.V. Mosby, p. 70, 1978.
8. Lunt, R.C. and Law, D.B. A review of the chronology of eruption of deciduous teeth. *JADA* 89:872-879, 1974.
9. Turner, C.G., II. What is lost with skeletal reburial? II. Affinity Assessment. *Quart Rev Archaeol* 7:11-12, 1986.

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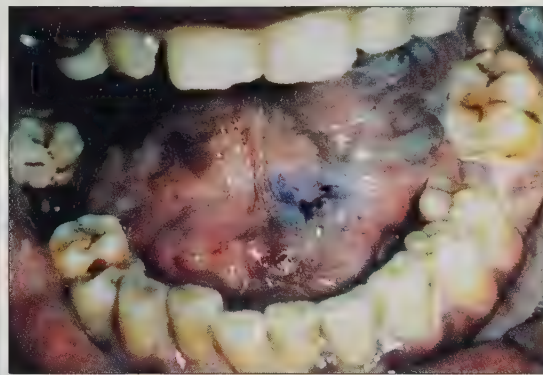
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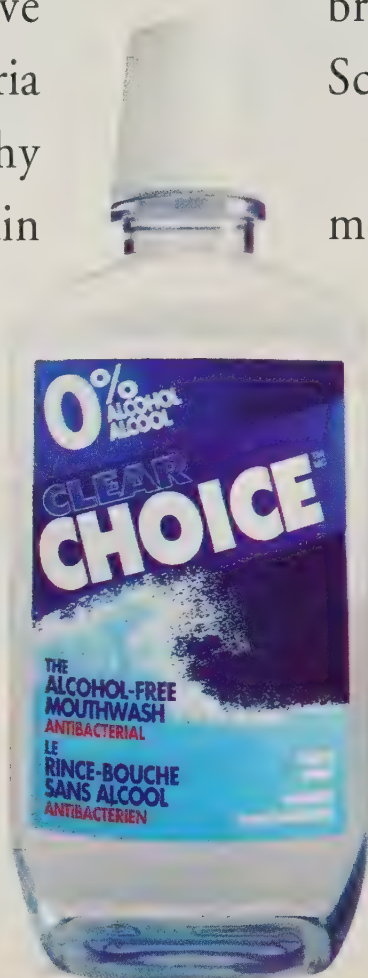
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of high need. Limited funds will also be provided for two pilot projects involving school-based dental services in high-need areas. These projects will be delivered by district health boards.

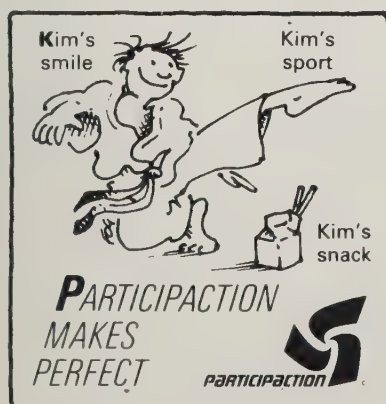
Conclusions

The demise of the children's dental plan ended 20 years of socialized, prepaid dental care for Saskatchewan children. It is perhaps only fitting that the plan was both originated and ended by a social democratic NDP government. In a failing economy, the plan had become too rich for a province heavily weighted in social programs. The simple fact of the matter is that Saskatchewan could no longer afford to provide free dental care to children.

In retrospect, the plan served its purpose well. Saskatchewan children received excellent dental care, both in the school-based plan and later in the private sector. The enrolment and utilization rates of the plan were excellent under both methods of delivery. This bodes well both for the people of Saskatchewan who took advantage of the plan and the dental personnel who provided the service.

The present minister of health, vows a return to a school-based dental program at some time in the future. Only time, economics, and the political philosophy of the day will determine when, or if, that return will occur. ■

Dr. Jack W. Niedermayer maintains a private practice in Regina, Saskatchewan. He is a past-president of CDA (1988-89).



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TABLE 1

Body weight	Dosage in capsules of Rovamycine '250'
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15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

absorption is not affected by food. In severe infections, the daily dosage may be increased by one half. In the treatment of beta-hemolytic streptococcal infections, adequate spiramycin dosage should be administered for 10 days. **SUPPLIED: Rovamycine '250':** Each orange and red capsule contains: 750,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50. **Rovamycine '500':** Each grey and red capsule contains: 1,500,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50.

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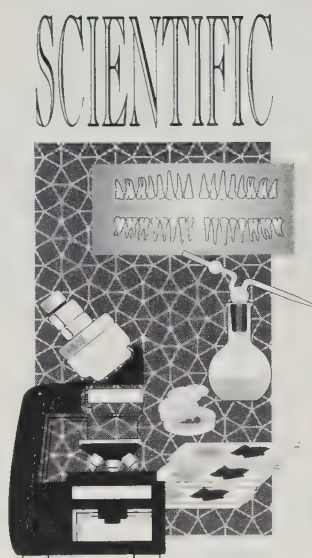
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Two-Year Outcome Study of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth

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Toronto

Introduction

The early loss of primary teeth often interferes with normal occlusal development. Consequently, maintaining a functional dental arch is one of the fundamental objectives of pediatric dentistry. The formocresol pulpotomy remains the most common pulp treatment technique used to prevent premature primary tooth loss.^{1,2}

One alternative, the non-aldehyde pulpectomy procedure, has been advocated for primary teeth with vital pulp exposures.³⁻⁶ This technique was developed in response to mounting evidence that aldehyde-containing root canal medicaments have a mutagenic, carcinogenic and sensitizing potential.⁷⁻¹⁷

The purpose of this study was to evaluate the two-year outcomes of human vital anterior and posterior primary teeth that had been treated by pulpectomies and obturated with non-fortified zinc oxide-eugenol cement.

Methods and Materials

The sample consisted of healthy patients referred for dental treatment under general anesthesia at The Hospital for Sick Children,

Toronto, over a two-year period. The patients had one or more carious primary teeth that required treatment of vital pulp tissue. There was no radiographic evidence of pathological or physiological root resorption, periapical or furcational radiolucency, or pulp stones. No clinical signs of abscess or sinus tracts were apparent. The sample encompassed 165 patients (89 males and 76 females) with an average age of 3.2 years (range: 1.7 to 7.1 years) at the time of treatment. Treatment was performed by one of three pediatric dentists, and preoperative periapical radiographs were taken of each tooth.

For each patient, pulpectomy was performed by the insertion of two Number 15 or 20 Hedström files, one at a time, down opposite sides of each root canal to a point close to, but short of, the apex.^{5,6} The files were then rotated together two or three times to engage the pulp tissue, and withdrawn simultaneously. In most cases, the pulp tissue was removed *en bloc* on the first attempt. Each canal was irrigated with water and gently dried with an air-water syringe or paper points. Canals were obturated with a viscous mixture of ZOE 2200 Cement (L.D. Caulk, Milford, Delaware), a fine-grained, non-rein-

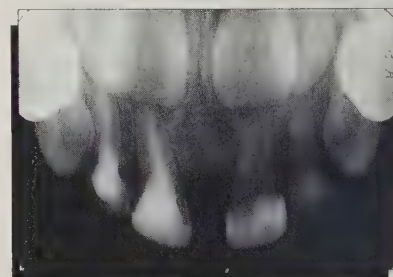


Fig. 1: Teeth 5-1 and 5-2 were rated as "N" by both raters.

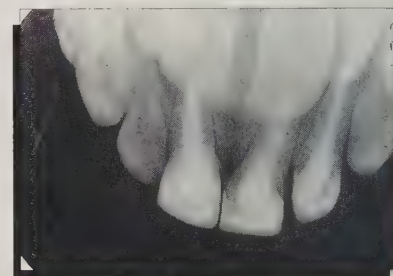


Fig. 2: Teeth 5-1 and 6-1 were rated as "H" by both raters.

forced zinc oxide-eugenol cement. The paste was delivered to a point just short of the apices with a spiral paste filler. For anterior teeth, the coronal zinc oxide-eugenol cement was removed and the teeth were restored using the composite short-post technique.^{3,4} Posterior teeth were restored with stainless steel crowns cemented with poly-

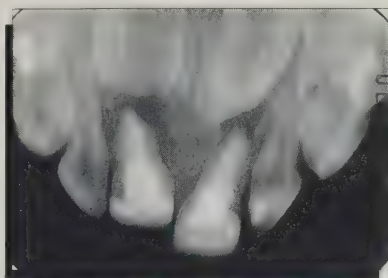


Fig. 3: Teeth 5-1 and 6-1 were rated as "Po" by both raters.

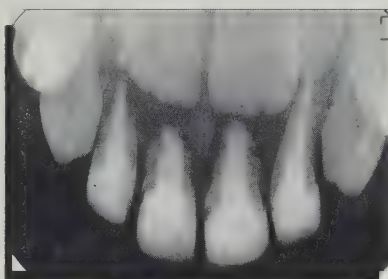


Fig. 4: Teeth 5-2, 5-1 and 6-1 were rated as "Px" by both raters.

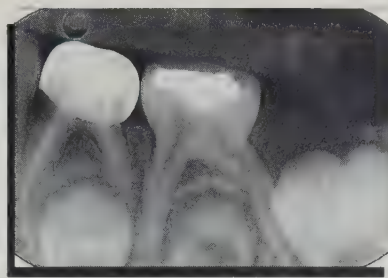


Fig. 5: Tooth 7-4 was rated as "N" by both raters.

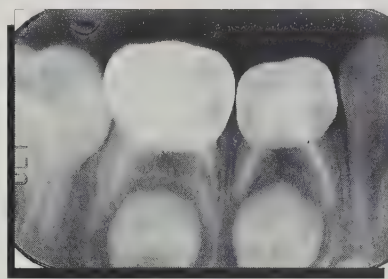


Fig. 6: Tooth 8-4 was rated as "H" by both raters.

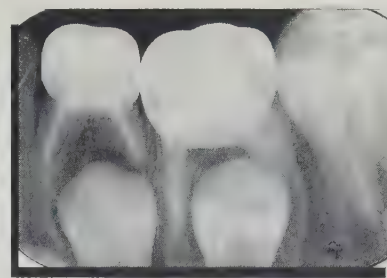


Fig. 7: Tooth 7-4 was rated as "Po" by both raters.

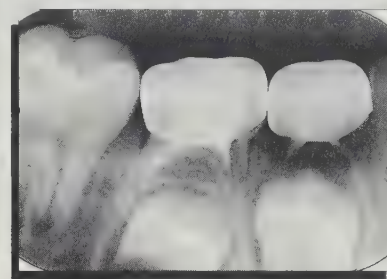


Fig. 8: Tooth 8-4 was rated as "Px" by both raters.

carboxylate cement. An immediate postoperative radiograph was taken.

Follow-up

After treatment, patients returned to their dentist for continuing care. Two years after the initial treatment, parents were contacted to arrange a recall visit. Recall appointments included a dental history, as well as clinical and radiographic examination of the restored teeth. Patients and parents were also questioned about the occurrence of pain and gingival swelling after the initial treatment. The clinical examination included an evaluation of tooth mobility and gingival health. If a restored tooth was missing at recall, it was determined if it was lost due to trauma, had been extracted, or exfoliated. The child's dentist provided the date of extraction and diagnosis where extraction had occurred. Tooth mobility was assessed and all clinical results recorded. A periapical radiograph of each restored tooth was taken.

Radiographic Methods

Prior to patient evaluation, two pediatric dentists, external to the study, were trained together to establish inter-rater agreement on the radiographic evaluation criteria. They viewed radiographs from a

series of cases that consisted of preoperative, immediate postoperative, and recall periapical radiographs of several treated teeth. None of the radiographs used for training were from the present study. Training was continued until the raters demonstrated consistent application of the criteria.

Evaluation Sessions

The preoperative, immediate postoperative and recall periapical radiographs for each tooth were examined in a manner appropriate for proper radiographic analysis. The two clinicians assessed each radiograph independently. Raters were blind to both the patient and the clinician who restored the tooth. An opaque cover obscured the immediate postoperative radiographs until the recall radiographs were rated. Cases were presented for evaluation in random order. Each rater was proctored by a person who presented the cases for viewing and recorded the ratings. A second rating session took place one week later to assess intra-rater reliability. A random sample of 20 anterior and 20 posterior cases from this study sample was evaluated by the same raters in a format identical to the first session.

Radiographic Criteria

The raters were asked if the

apex/apices of each restored anterior/posterior tooth was/were visible on the recall radiographs. If so, the raters were asked if there was any apical pathosis present. The presence or absence of furcational pathosis was noted for posterior teeth.

The raters classified each tooth as either: no evidence of bone or root resorption (N), physiological root resorption associated with the exfoliative process without evidence of bone rarefaction (H), or pathological resorption associated with bone rarefaction (P). If the tooth was rated as P, the proctor provided the rater with the following clinical information: presence or absence of pain or infection, and age of the patient at recall. The rater then further sub-divided teeth rated as P into: pathological resorption associated with bone rarefaction (acceptable to retain the tooth and follow-up radiographically in six months (Po)), or pathological resorption associated with bone rarefaction (immediate extraction recommended (Px)). Teeth that had been extracted before the recall appointment were rated as Px. Radiographs of anterior and posterior teeth rated as N, H, Po, and Px are shown in **Figs. 1 to 8**.

Two levels of acceptability were identified. In this study, teeth rated as N+H were considered ac-

TABLE I

A Summary of Treatment Outcomes for All Anterior Teeth At Two Years (n = 150)

Class.*	Combined		Rater 1		Rater 2	
	%	Cum. %	%	Cum. %	%	Cum. %
N	5.7	5.7	7.1	7.1	4.3	4.3
H	53.2	58.9	45.0	52.1	61.4	65.7
Po	23.9	82.8	34.3	86.4	13.6	79.3
Px	17.2	100.0	13.6	100.0	20.7	100.0

* N – No evidence of bone or root resorption

H – Physiological root resorption associated with the exfoliative process

Po – Pathological resorption associated with bone rarefaction; follow-up in 6 months

Px – Pathological resorption associated with bone rarefaction; extract immediately

ceptable on physiological/developmental criteria. However, this does not reflect current clinical practice, where the combination of N+H+Po is most often used. This combination was also used in previous studies of primary pulp treatment techniques. Clinicians are prepared to accept pulp-treated primary teeth that have a limited degree of radiolucency or pathological root resorption (Po) in the absence of clinical signs and symptoms. This is contingent on the assurance that the parent will contact the dentist if there is an acute problem and the patient will return for recall in six months. Most of the pulp therapy studies in the existing literature have considered such teeth to be "successfully" treated.

The blind that obscured the immediate postoperative radiograph(s) was then removed and each rater assessed the initial obturation of the treated teeth. The rating was either: adequately-filled canal (A), over-filled canal (O), or under-filled canal (U).

Statistical Methods

The tooth was used as the unit of analysis for outcomes and obturation data. Since the number of sample teeth per patient was variable, the observations were not independent. When it occurred, the absence of statistical significance was most informative due to the inflated type I error rate of the statistical tests.

Percentages and frequency counts were used to summarize

categorical data. Continuous variables such as patient age were presented as means and standard deviations. For categorical variables such as gender, association with outcomes and obturation data was measured using the chi-square statistic (uncorrected).

Intra-rater and inter-rater agreement for dichotomous responses were measured with the Kappa statistic.^{18,19} A t-value was calculated for the hypothesis that the observed agreement was significantly different from zero. In addition, a 95 per cent confidence interval was calculated for each Kappa value.

For ordinal responses where the Kappa value was degenerate, the intra-rater agreement was measured with the intra-class correlation statistic (ICC). Analysis of variance was used to calculate statistical significance due to observer for intra-rater agreement on classification of outcomes for anterior and posterior teeth.

All computations were run on a DEC system 5000 computer running Ultrix, version 4.1 (Research Computing, The Hospital for Sick Children). BMDP programs 4f and 8v were used for reliability (agreement) analysis. The median test was carried out with Minitab. SAS's proc. freq. was used to calculate the uncorrected chi-square statistic.

Results

A total of 81 patients (47 males and 34 females) were available for two-year recall. This provided a

sample of 253 anterior and posterior teeth. The patient recall rate was 48 per cent. The remaining patients were designated as "lost to follow-up," despite extensive steps to locate them. (The hospital has an itinerant patient pool, and 96 per cent of those lost to follow-up could not be located.) The final sample consisted of 150 maxillary primary anterior teeth (77 central incisors; 68 lateral incisors; and five canines) and 103 posterior primary teeth (32 maxillary first molars; 13 maxillary second molars; 34 mandibular first molars; and 24 mandibular second molars).

Anterior Teeth

The average age of patients (n = 55) was 2.9 years (s = 0.7 years). The average recall interval was 24 months (s = 4.3 months). There was complete agreement for apex visibility, and a substantial (K = 0.65) agreement between raters on the presence of apical pathosis (Po, Px). Intra-rater agreement for the presence of apical pathosis, one week later, was 0.82 and 0.77 for raters 1 and 2, respectively. The outcomes for anterior teeth are presented in **Table I**. There was moderate (K = 0.58) agreement between raters for the classification of anterior teeth. Intra-rater agreement for these classifications was 0.84 for both raters one week later.

With respect to combined categories, no resorption/physiological resorption (N+H) was identified in 58.9 per cent of anterior teeth, and the addition of the third category – pathological resorption, follow-up in six months (N+H+Po) – included 82.8 per cent of the pooled sample of anterior teeth.

Central incisors had lower outcomes in both category combinations (N+H) and (N+H+Po) when compared with lateral incisors and cuspids (P < 0.005). Acceptable outcomes (N+H+Po) were seen in 74.3 per cent of central incisors compared with 91.5 per cent of lateral incisors and canines (**Table II**).

Classifications were not significantly influenced by either operator differences or the gender of the patient. Patients who were younger at the time of treatment tended to have a more favorable outcome,

*Dr. Richard Rayman
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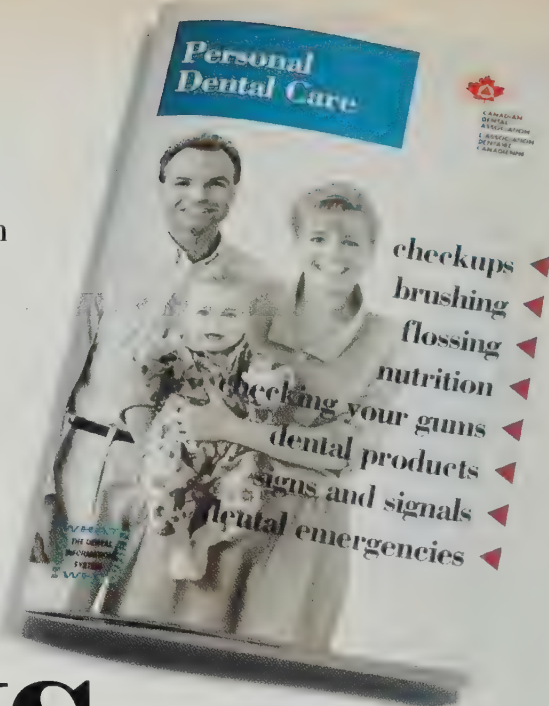
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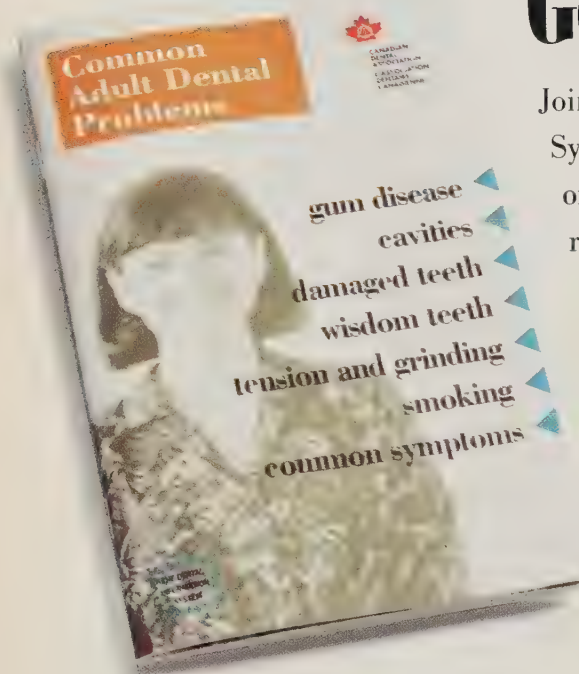
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although the relationship was significant only for Rater 1 ($P = 0.04$ (Rater 1); $P = 0.17$ (Rater 2)). However, a longer recall interval was more often associated with an unfavorable treatment outcome ($P = 0.02$ (Rater 1); $P < 0.001$ (Rater 2)). There was moderate strength of agreement between raters ($K = 0.51$) on the adequacy of obturation. The intra-rater agreement was 0.70 and 0.69 for raters 1 and 2, respectively.

There was no significant relationship between degree of obturation, patient gender or operator and the treatment outcome. There was a statistically significant relationship between the degree of obturation and the type of tooth ($P < 0.05$). In general, lateral incisors and canines were more likely to be adequately filled, while central incisors were more likely to be under filled.

Posterior Teeth

The average age of patients ($n = 38$) was 3.8 years ($s = 1.2$ years), the average recall interval was 26.1 months ($s = 4.5$ months), and the recall rate was 64 per cent. Inter-rater agreement on visibility of apices was substantial ($K = 0.68$), while intra-rater agreement was 0.45 and 0.48 for raters 1 and 2, respectively. There was moderate strength of agreement between raters on the presence of apical pathosis ($K = 0.42$), with intra-rater agreement of 0.65 and 0.58 for raters 1 and 2, respectively. Inter-rater agreement on the presence of furcational pathosis was moderate ($K = 0.42$), with intra-rater agreement of 0.64 and 0.83 for raters 1 and 2, respectively.

Treatment outcomes for posterior teeth are presented in **Table III**. Combined outcome for (N+H) was 67.0 per cent and 90.3 per cent for (N+H+Po). Inter-rater agreement for classification was fair ($K = 0.37$), with a intra-rater agreement of 0.72 and 0.69 for raters 1 and 2, respectively. There was no significant effect on classifications by gender, operator, or tooth. Unfavorable outcomes (Px) were more often associated with under-filled canals.

There was fair agreement between the raters on the number of adequately-filled canals ($K = 0.26$)

TABLE II

A Summary of Treatment Outcomes for Central Incisors Compared With Lateral Incisors and Canines. ($n = 150$)

Class.*	Central Incisors		Other Anteriors	
	%	Cum. %	%	Cum. %
N	2.8	2.8	8.5	8.5
H	40.8	43.6	65.8	74.3
Po	30.7	74.3	17.2	91.5
Px	25.7	100.0	8.5	100.0

* N – No evidence of bone or root resorption

H – Physiological root resorption associated with the exfoliative process

Po – Pathological resorption associated with bone rarefaction; follow-up in 6 months

Px – Pathological resorption associated with bone rarefaction; extract immediately

TABLE III

A Summary of Treatment Outcomes for Posterior Teeth At Two Years ($n = 103$)

Class.*	Combined		Rater 1		Rater 2	
	%	Cum. %	%	Cum. %	%	Cum. %
N	4.3	4.3	2.9	2.9	5.8	5.8
H	62.7	67.0	54.4	57.3	70.9	76.3
Po	23.3	90.3	32.0	89.3	14.6	91.3
Px	9.7	100.0	10.7	100.0	8.7	100.0

* N – No evidence of bone or root resorption

H – Physiological root resorption associated with the exfoliative process

Po – Pathological resorption associated with bone rarefaction; follow-up in 6 months

Px – Pathological resorption associated with bone rarefaction; extract immediately

and under-filled canals ($K = 0.23$). Agreement on the number of over-filled canals was moderate ($K = 0.54$). Intra-rater agreement for the number of adequately-filled canals and under-filled canals was 0.26/0.41 and 0.31/0.45 for raters 1 and 2, respectively. Intra-rater agreement for over-filled canals was 0.62 and 0.35 for each rater.

Patient age at either treatment or recall interval did not affect outcome. There were no significant differences between first and second primary molars, or between maxillary and mandibular teeth.

Discussion

North American parents have become motivated to maintain the integrity of their own dental arches

and often apply the same criteria to their children's teeth. Clinicians are well aware of parental desires to have children's primary teeth restored unless extraction is absolutely necessary. The parents of children with delayed speech development or feeding disorders, for example, are particularly concerned that their children's maxillary anterior teeth are preserved, and all parents know the importance of teeth for mastication. In the case of very young children with rampant caries of the anterior teeth, parents are often concerned that the child will become a focus of undue attention by their peers. Other parents prefer to have their children's teeth restored to avoid putting the child through the

experience of extraction, or because they feel personal guilt over the child's condition. All of these factors have led parents to have new, higher levels of expectation that the dentist will attempt and be able to maintain their children's primary teeth throughout their natural life cycle.

Hibbard and Ireland's²⁰ study of the root canal morphology of primary teeth described the variable and often unpredictable root canal anatomy of primary teeth as a result of the deposition of secondary dentin. This article was widely quoted as evidence that debridement and obturation of the root canal systems of primary teeth was next to impossible. The paper proved to be a principal deterrent to the development of pulpectomy procedures in the primary dentition. Although the primary canal pulp tissue cannot be completely removed, a biological balance can often be reached that permits survival of the pulp-treated tooth until the succedaneous tooth erupts into function.^{21,22}

Some clinicians hesitated to perform pulpectomy procedures because they felt it would lead to uneven or abnormal root resorption. Recently, a study of root resorption in 625 primary molars demonstrated that uneven root resorption is a common occurrence (36 per cent) in normal, untreated teeth.²³ Controlled management of pre-existing pathosis is the basis of all primary root canal treatment techniques.^{22,24}

North American dentists are taught that the formocresol pulpotomy is the proper treatment for primary teeth when vital dental pulps are exposed during removal of caries.^{1,25,26} However, in 1978, a pivotal paper was published by Myers et al²⁷ that changed the direction of primary pulp therapy investigations. Their observation that formocresol pulpotomies released formaldehyde into the blood vascular system led to a number of studies that extended these findings and considered glutaraldehyde as well.^{11-15,28} Several studies in the medical literature have reported significant adverse immunological effects associated with exposure to formaldehyde.^{29,30} The

potential for formaldehyde-induced mutagenicity has also been suggested.³¹⁻³⁴

An alternative to the use of aldehydes for the treatment of vital primary teeth is the zinc oxide-eugenol pulpectomy technique. In studies where clinical and radiographic criteria were used for evaluation, the six- and 12-month efficacy of this technique has been shown to be at least as good, or better, than comparable success rates reported for the formocresol pulpotomy.⁶

The current investigation is the second independent longitudinal outcome study to use the same technique. This study contributes a larger, completely different sample population and a longer follow-up time. There is currently no other study that uses the same criteria of experimental design, independent assessment of radiographic interpretation or sample size for any other primary pulp treatment.

Anterior teeth

The combination of data from the present study and that of Yacobi et al allows clinicians to inform parents about the chances of having a clinically acceptable outcome at six months (89.5 per cent), 12 months (75.8 per cent) and 24 months (60-90 per cent) postoperatively.^{2,6} The 24-month range of acceptable outcomes is based on an acceptance of physiological resorptive changes (N+H) only, or these changes plus some pathological radiolucency (N+H+Po). **Figs. 3 and 4** offer guidance on the degree of radiolucency that is considered acceptable with six months radiographic follow-up, and the degree of resorption at which the clinician should proceed with extraction.

The observation that central incisors have a less favorable rate of outcome (44 to 74 per cent) at two years, compared to other anterior teeth (74 to 90 per cent), provides additional treatment planning guidance for clinicians. Pulp treatment in a three-year-old probably accelerates the resorptive process of the central incisors. Consequently, two years later, when the child is 5, pathological resorption has proceeded sufficiently so that

25 to 30 per cent of the central incisors are candidates for extraction.

Posterior Teeth

Clinicians can now inform parents that the zinc oxide-eugenol pulpectomy technique for posterior teeth is at least as successful (67 to 91 per cent) as current aldehyde-based methods at two years.² **Figs. 7 and 8** help differentiate between acceptable cases and extraction cases. Goerig and Camp³⁵ have pointed out that it is impossible to substantiate the claim that endodontic treatment of a primary tooth is more expensive than extraction when the long-term costs of space maintenance or occlusal disruption are considered.

The reason for the differences in outcomes between anterior and posterior teeth remains unclear. Perhaps anterior teeth are more susceptible to marginal leakage and subsequent percolation of saliva, zinc oxide-eugenol dissolution and bacterial ingress secondary to polymerization shrinkage of the composite resin restorative material. On the other hand, the marginal seal of the posterior stainless steel crown restoration is likely superior, given the character and extent of the luting agent, polycarboxylate cement.

Interpretation of Radiographs

The results of this study and that of Yacobi et al⁶ confirm the degree of difficulty that is involved with radiographic interpretation in children with mixed dentitions. The inter-rater reliabilities demonstrate only moderate strength of agreement between trained raters for anterior and posterior teeth. Most of this variability was seen when the raters had to decide whether to rate a tooth as H or Po, as well as Po or Px. The levels of inter-rater reliability shown in these two studies will provide useful information for those who are interested in both radiographic interpretation and its effects on the validity of study results. This investigation also demonstrated that trained raters show variances in their own diagnostic interpretation over time when the degree of difficulty of radiographic

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interpretation is high.

There are now two reasons to favor the use of the zinc oxide-eugenol pulpectomy for treating the vital pulps of primary teeth as opposed to the formocresol pulpotomy. First, and most importantly, it avoids the use of free aldehydes in the pediatric population. Secondly, it is the only primary pulp management technique that has two separate statistically-based longitudinal outcome studies to support its validity. ■

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References

1. Avram, D.C. and Pulver, F. Pulpotomy medicaments for vital primary teeth. *J Dent Child* 56:426-434, 1989.
2. Payne, R.G. A longitudinal outcome study of zinc oxide-eugenol pulpectomies in human vital primary teeth. Thesis, Faculty of Graduate Studies, University of Toronto, pp. 1-146, Toronto, 1992.
3. Kenny, D.J., Johnston, D.H. and Bamba, S. The composite resin short-post: A review of 625 teeth. *Ont Dent* 63:12-18, 1986.
4. Judd, P.L., Kenny, D.J., Johnston, D.H. et al. Composite resin short-post technique for primary anterior teeth. *JADA* 120:553-555, 1990.
5. Judd, P.L. and Kenny, D.J. Non-aldehyde pulpectomy for primary teeth. *Ont Dent* 68:25-32, 1991.

6. Yacobi, R., Kenny, D.J., Judd, P.L. et al. Evolving primary pulp therapy techniques. *JADA* 122:83-85, 1991.
7. Judd, P.L. and Kenny, D.J. Formocresol concerns: A review. *J Can Dent Assoc* 53:401-404, 1987.
8. Feigal, R.J. and Messer, H.H. A critical look at glutaraldehyde. *Pediatr Dent* 12:69-71, 1990.
9. Kenny, D.J. and Judd, P.L. Opinion: Time to reconsider the use of aldehydes in children's dentistry. *J Can Dent Assoc* 53:333, 1987.
10. Patterson, R., Dykewicz, M.S., Grammer, L.C. et al. Formaldehyde reactions and the burden of proof. (editorial) *J Allergy Clin Immunol* 79:705-706, 1987.
11. Pashley, E.L., Myers, D.R., Pashley, D.H. et al. Systemic distribution of ¹⁴C-formaldehyde from formocresol-treated pulpotomy sites. *J Dent Res* 59:602-607, 1980.
12. Myers, D.R., Pashley, D.H., Whitford, G.M. et al. Tissue changes induced by the absorption of formocresol from pulpotomy sites in dogs. *Pediatr Dent* 5:6-8, 1983.
13. Myers, D.R., Pashley, D.H., Lake, F.T. et al. Systemic absorption of ¹⁴C-glutaraldehyde from glutaraldehyde-treated pulpotomy sites. *Pediatr Dent* 8:134-138, 1986.
14. Ranly, D.M. Assessment of the systemic distribution and toxicity of formaldehyde following pulpotomy treatment: Part one. *J Dent Child* 52:431-434, 1985.
15. Ranly, D.M. and Horn, D. Assessment of the systemic distribution and toxicity of formaldehyde following pulpotomy treatment: Part two. *J Dent Child* 54:40-44, 1987.
16. Sun, H.W., Feigal, R.J. and Messer, H.H. Cytotoxicity of glutaraldehyde and formaldehyde in relation to time of exposure and concentration. *Pediatr Dent* 12:303-307, 1990.
17. Council on Dental Therapeutics, Council on Dental Materials, Instruments, and Equipment. The use of root canal filling materials containing paraformaldehyde: A status report. *JADA* 114:95, 1987.
18. Fleiss, J.L. The measurement of inter-rater agreement. In: *Statistical Methods for Rates and Proportions*, Chap. 13, New York: John Wiley and Sons, p. 217, 1981.
19. Landis, R.J. and Koch, G.G. The measurement of observer agreement for categorical data. *Biometrics* 33:159-174, 1977.
20. Hibbard, E.D. and Ireland, R.L. Morphology of the root canals of the primary molar teeth. *J Dent Child* 24:250-257, 1957.
21. Ranly, D.M. and Lazzari, E.P. The

formocresol pulpotomy – The past, the present, and the future. *J Pedod* 2:115-127, 1978.

22. Ranly, D.M. Pulp therapy in primary teeth. A review and prospectus. *Acta Odont Pediatr* 3:63-68, 1982.

23. Prove, S.A., Symons, A.L. and Meyers, I.A. Physiological root resorption of primary molars. *J Clin Pediatr Dent* 16:202-206, 1992.

24. Rolling, I. and Lambjerg-Hansen, H. Pulp condition of successfully formocresol-treated primary molars. *Scand J Dent Res* 86:267-272, 1978.

25. Stone, H. and Hink, B.A. Survey of pulp therapy techniques for vital deciduous teeth. *J Can Dent Assoc* 31:512-514, 1965.

26. Spedding, R.H. Pulp therapy for primary teeth – Survey of the North American dental schools. *J Dent Child* 35:360-367, 1968.

27. Myers, D.R., Shoaf, H.K., Dirksen, T.R. et al. Distribution of ¹⁴C-formaldehyde after pulpotomy with formocresol. *JADA* 96:805-813, 1978.

28. Block, R.M., Lewis, R.D., Hirsch, J. et al. Systemic distribution of (¹⁴C) labeled paraformaldehyde incorporated within formocresol following pulpotomies in dogs. *J Endodont* 9:176-189, 1983.

29. Popa, V., Teculesou, D., Stanescu, D. et al. Bronchial asthma and asthmatic bronchitis determined by simple chemicals. *Dis Chest* 56:395-404, 1969.

30. Schorr, W.F., Keran, E. and Plotka, E. Formaldehyde allergy. *Arch Dermatol* 110:73-76, 1974.

31. Auerbach, C., Moutschen-Dahmen, M. and Moutschen, J. Genetic and cytogenetical effects of formaldehyde and related compounds. *Mutat Res* 39:317-362, 1977.

32. ECETOC Technical Report No. 2. *The mutagenic and carcinogenic potential of formaldehyde*. European Chemical Industry Ecology & Toxicology Centre, Brussels, Belgium. pp. 1-31, 1981.

33. Lewis, B.B. and Chestner, S.B. Formaldehyde in dentistry: A review of mutagenic and carcinogenic potential. *JADA* 103:429-434, 1981.

34. Bernstein, R.S., Stayner, L.T., Elliott, L.J. et al. Inhalation exposure to formaldehyde: An overview of its toxicology, epidemiology, monitoring, and control. *Am Ind Hyg Assoc J* 45:778-785, 1984.

35. Goerig, A.C. and Camp, J.H. Root canal treatment in primary teeth: A review. *Pediatr Dent* 5:33-37, 1983.



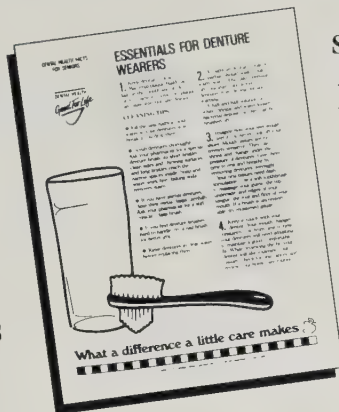
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Composite Resin Restoratives Revisited

Peter T. Williams, DDS, MS

Leonard N. Johnson, PhD

ABSTRACT

To choose the most suitable composite for the clinical challenge, the clinician must consider a number of issues. This paper examines those issues, as well as how the selected material can best be manipulated to obtain optimum results. It is intended to help the clinician select this material, and to provide information on the clinical relevance of the different compositions and filler sizes of composite materials, proper techniques for light curing – including the effects of light to resin distance and light angulation – and methods that can be used to evaluate the effectiveness of the light-curing unit. The effect of surface finish on wear is also discussed, along with suggestions on proper finishing techniques.

SOMMAIRE

Pour choisir la résine composite la plus appropriée en vue de résoudre un problème clinique, le clinicien doit prendre en compte plusieurs points. Dans cet article, on examine ces points et on explique comment manipuler le mieux possible le matériau choisi afin d'obtenir des résultats optimaux. On espère aider ainsi le clinicien à choisir ce matériau et lui montrer l'utilité clinique des différents éléments entrant dans la composition des résines composites, celle des obturateurs de différentes tailles, les

bonnes techniques de polymérisation — y compris les effets de la polymérisation par rapport à l'angle de la lumière et à la distance séparant la lumière du matériau — et les méthodes auxquelles on peut recourir pour déterminer l'efficacité des polymérisateurs. Enfin, on parle des produits de finition par rapport à l'usure et on propose de bonnes méthodes de finissage.

The recent introduction of composite resin technology to restorative dentistry is one of the most significant advances to come out of dental materials science in recent years. A properly-placed composite restoration will give many years of functional and esthetic service (**Fig. 1**). Handling

composites correctly will help the clinician to achieve the optimum clinical result possible. Unfortunately, the combination of mastication and repeated chemical insults from food can rapidly destroy these restorations.

Two recent reviews of composite resin restoratives (published in the *Journal of the Canadian Dental Association*)^{1,2} provide some theoretical background for understanding composites. A third article (also published in the *Journal*)³ summarizes the relative desirability of 14 currently-available, popular composites in a manner that should help practitioners select the materials that best meet their practice needs. Recent dental materials textbooks^{4,5,6} (available from the CDA library or your local dental school) should also be consulted.



Fig. 1: Immediately after placement, class IV composite resin restorations on the mesial-incisal aspects of 11 and 21 are virtually undetectable (Photograph courtesy of Dr. Amasis N. Louka, Univ. of Manitoba).

Selection

The clinician must first decide whether a composite would be a suitable restorative material for the required treatment. Until recently, most studies^{7,8,9} demonstrated that composite restorations experienced excessive wear. Although a few recent clinical trials indicated that some composites have a satisfactory long-term performance (five to eight years),^{10,11} they still cannot compete with amalgam, which has a long-term performance record of 12 to 20 years. Prudent practice would indicate that composites should not be used in situations where moderate or heavy occlusion is involved, as excessive wear or outright fracturing may be the result.

When deciding whether to use a composite or an alternative restorative material, the clinician should note the location of the restoration. As composites are placed more distally, they wear increasingly rapidly. For example, composite wear is up to six times as great² in second molars than it is in first premolars.

The clinician must also remember that carious lesions progress much more quickly under composite restorations.² This may be due to amalgam's self-sealing characteristics, or to the presence of the anticariogenic corrosion products that are always present along the amalgam/tooth interface. In fact, for those patients whose caries index is expected to remain high, composite restorations may be contraindicated.

Although composite restorations and amalgam have similar tensile strengths, composites seldom experience ditching and marginal breakdown except in areas of occlusion. For margins where occlusion is anticipated, butt joints, not bevels, are recommended. The butt joint, because of its greater bulk, will more successfully resist fracture. A detailed evaluation of the occlusion is warranted to detect areas of potentially excessive stress. Modest changes in cavity design to provide more restoration bulk, or selective grinding to produce a balanced occlusion that distributes the stresses over as large a number of teeth and surface area as

possible, may be all that is required to reduce both the wear rate and incidence of fracture. Should clinical judgment indicate that neither of these minor adjustments will correct the problem, then a material that is stronger and more wear resistant than composite resin should be chosen.

Almost all the composites available today are based on Bowens BIS-GMA resin or a homologue of this molecule. A few brands use urethane dimethacrylate and its homologues. Although they are different materials with different properties, clinical experience has shown that this has little effect on their overall performance. In contrast, the filler composition, size, and loading of the selected composite does have a profound effect on clinical performance.

Composites that contain relatively large regions of resin between large filler particles cannot be given a smooth surface by polishing. They wear quickly because the wear process that occurs during polishing or function removes the soft resin more rapidly than the filler, creating a rough surface composed of filler particles standing proud of the resin matrix. During mastication, the filler particles are fractured or dislodged, and can accelerate the wear process by acting as an abrasive. Composites that are heavily loaded and have a maximized packing density to reduce the size of the matrix filled areas will potentially have better finishing properties. If the inter-particle spacing of the filler can be reduced to less than that of the submicron-sized abrasive particles present in most foods, the depth of matrix wear between the filler particles will be limited and the wear rate of the composite restoration should fall to low levels. Also, by reducing the amount of resin surface exposed to the oral environment, organic solvents such as the fats and oils present in the normal diet are less able to diffuse into the resin and soften it.¹²

Although radiopacity of the composite is highly desirable to facilitate diagnostic procedures, the addition of radiopaque glass fillers decreases the restoration's wear resistance. Since these fillers are

slightly soluble in the oral fluids, osmotic pressure can develop along the filler/matrix interface, causing filler debonding¹³ and the fracturing of the composite surface. Strontium glass fillers are particularly susceptible to this form of degradation, and composites that contain these fillers should be avoided. In contrast, quartz fillers are both radiolucent and insoluble.

Several publications regularly review composites and make recommendations concerning their application and manipulation, based on the results of clinical evaluations and testing to standards. The *Dental Advisor* (Ann Arbor, Mich.) and the *ADEPT Report* (ADEPT Institute, Santa Fe, Cal.) publish quarterly reviews, and both *The Dentaletter* (Toronto, Ont.) and the *Clinical Research Associates Newsletter* (Provo, Utah) publish their findings monthly.

The American Dental Association (ADA) also conducts a regular evaluation of composite restorative materials. A list of "certified and acceptable" materials can be ordered directly from ADA's office in Chicago. ADA (January 1993) has approved nearly 80 composite materials for use in anterior applications (under their certification program) and eight composite resin materials for use in the more demanding posterior applications (under their acceptance program).

Clinicians should ensure that ADA's Seal of Acceptance or Seal of Certification appear on the packaging of the composite materials they select for their patients. If neither seal appears, it may indicate that the material does not meet ADA's specifications, even though the material's brand name and manufacturer may appear on ADA's lists of certified and acceptable materials.

CDA will likely publish similar lists on an annual basis once its Professional Product Recognition Program is fully implemented. In the meantime, clinicians are encouraged to contact Health and Welfare, Health Protection Branch's "hot line" (1-800-267-9675) to report any problems related to dental materials or devices.

Manipulation

Composites are often stored in the refrigerator to increase their shelf life. Before use, they should be allowed to return to room temperature to ensure that the material does not experience water condensation, which will both weaken and discolor the restoration, and that it has the proper viscosity and setting rate. A dry field is mandatory for clinical success, since moisture contamination will result in discoloration, increased opacity, decreased mechanical properties and decreased bond strength.

Since these materials spontaneously polymerize and thicken with time, they should not be used if the material has passed its expiry date, as this will compromise bonding as well as other properties. When not in use, the containers or dispensers should be kept closed and out of direct light. As a general rule, these materials can be safely stored for one year at room temperature and for two years in the refrigerator.

Since the matrix resin is the weak component of composites, materials with high filler loadings should be selected. In addition, the properties of the resin matrix should be maximized by proper manipulation. Even slight undercuring of the resin will greatly decrease its resistance to wear. Materials that rely on light to initiate curing are very sensitive to exposure time, light intensity, and composite shade. Although the surface layer of the resin may be completely cured, inadequate exposure will result in the base of the restoration being undercured. Undercuring will result in a restoration that is weak and flexible, even after postcuring is complete, which leads to rapid wear and loss of bonding. A minimum of 40 seconds curing time should be used.¹⁴

To ensure that the maximum possible light is emitted by the light unit, the wand tip must be kept clean. The thickness of each increment should be kept to 2.0 mm or less, as this will favor complete curing and will reduce the polymerization-shrinkage stresses that can subsequently tear apart the tooth-to-resin bond. Since ambient light can cause slow setting, resulting in a loss of handling characteristics

and bonding potential, care should be taken to reduce the resin exposure to ambient light, including that emitted from the dental unit light, until the resin is cured.¹⁵

According to one study,¹⁶ the depth of cure ranged between less than 1.0 mm to over 4.0 mm when a variety of different shades of the same brand of composite were cured using the same curing light. Another study¹⁷ showed that the hardness, opposite the light source, of the surface of 3.0-mm thick samples was routinely less than half that of the top surface after 30 seconds of curing using several different brands of light units, indicating that the degree of cure decreases greatly with the thickness of composite. The practitioner must compensate for the decreased curing caused by the effects of shade and opacity by using smaller increments and longer curing times.

A light unit that gives a nonspreading beam with good intensity is preferred. Several articles have reported on the characteristics of light curing units.^{16,18} Since the maximum photo-initiation effect occurs at a wavelength of 470 μm , light units that strongly emit light at this wavelength are preferred. In one study the 470 μm light intensity of eight light units were compared¹⁶ and found to range from 155 lux to 1,198 lux. The same study reported that the depth of cure increased rapidly as

the light intensity at 470 μm increased up to a maximum of 550 lux. From this data, it would appear that a curing unit with a minimum light output of 550 lux should be used. Ideally, the tip of the light wand should be placed as close as possible to (but not touching) the resin surface, as this will give the maximum light intensity at the restoration surface.

Beam spreading as the wand is moved away from the resin surface will decrease the light intensity and the amount of curing very rapidly. Often, because of the cavity depth and the presence of clamps or other instrumentation, the wand tip must be held away from the surface. The amount of beam spreading can be determined by measuring the diameter of the light-emitting portion of the light wand, and then measuring the diameter of the brightest portion of the light spot created by directing the light beam perpendicularly onto a surface from a distance of about 100 mm. If there is no beam spreading, the diameter of the spot and the wand tip will be the same. If the spot diameter is larger, then spreading has occurred, and since the emitted light has been distributed over a larger area, the light intensity at the restoration surface has decreased.

Beam spreading can greatly affect light intensity. In the previous example, for instance, if the diame-

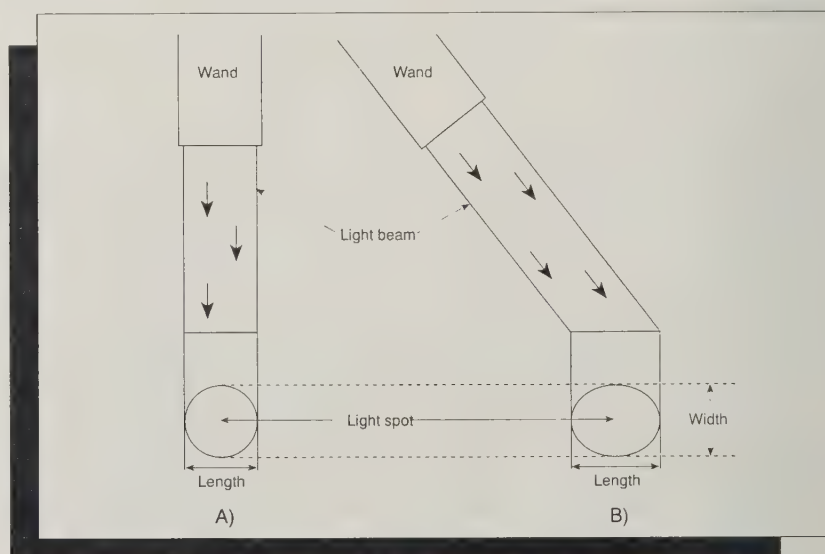


Fig. 2: Effect of beam incidence angle on spot size. A) When the beam is directed perpendicularly to the tooth surface, the light spot has the same shape as the light emitting area of the wand. In the case of a circular beam, both the length and width are the same size. B) When the wand is tipped, the spot width remains the same but the length and area increase.



Fig. 3: Photometer for evaluating the light intensity of dental light curing units. A readout of the light intensity is immediately shown when the wand tip is placed over the light sensor window located below the digital display.

ter of the light spot was twice that of the wand tip, then, since the areas of the wand tip and light spot are related to the square of their diameters, the light intensity has decreased by a factor of four. In other words, the light intensity present at the restoration surface and the depth of cure has been reduced to 25 per cent of that present when the wand contacted the surface. A simple experiment performed in the authors' laboratories using a popular light unit showed that when the wand was moved 3.0 mm above the restoration surface, the calculated light intensity was decreased by 60 per cent. This decrease can be easily seen by viewing the light spot cast by the wand through the appropriate yellow eye-protector shield. As the wand is moved away from the surface, the light intensity will decrease until it can no longer be seen through the shield. With the authors' unit, the light spot disappeared when the wand had been withdrawn a distance of about 5.0 cm from the surface, indicating that the light intensity decreases rapidly. With this unit, obviously, the wand tip has to be kept quite close to the resin surface to assure proper curing.

Light intensity can be measured

directly by means of a photometer (Fig. 2). To use this device, the wand tip is placed over the light sensor and the light intensity is displayed through a digital or analog readout. These units are capable of accurate results as long as the wand tip is placed at the exact location that the device was calibrated to read (reading position).

Using these meters to determine how rapidly the light intensity of a curing unit decreases as the wand tip is withdrawn from the restoration surface will usually give misleading results, however, since the relation of the wand tip to the photoactive surface is different than that of the wand tip to the resin surface. Since the photoactive element is covered with a protective lens and is recessed below the reading position, the wand, in effect, already has been withdrawn from the photoactive surface. The next increment of withdrawal will reduce the light intensity much less than would have occurred if the wand had been directly touching the photoactive surface.

Maximum light intensity at the resin surface will occur when the surface of the wand tip is parallel to the restoration surface. As the wand is tipped, the light intensity will decrease. As can be seen in Fig. 3, the beam creates a circular spot of light when held perpendicular to the restoration surface. When the wand is held at an angle, the shape changes to an ellipse whose area is greater than that of the spot. Since the light energy is spread over a greater area, the light intensity on the restoration surface and the curing depth is decreased. The effect of changing the angle of incidence of the light on the light intensity can be calculated using the formula $I_s = I_o \sin \theta$, where I_s is the light intensity on the restoration surface, I_o is the light intensity at the wand tip, and θ is the angle at which the light beam makes contact with the restoration surface. This equation shows that small amounts of tipping make very little difference to the light intensity, but that once the tipping creates an angle of incidence of less than 60 degrees, a large decrease in intensity occurs. For example, tipping the wand 20 degrees from the ver-

tical decreases the intensity by only six per cent, whereas tipping the wand an additional 20 degrees decreases the intensity by a further 18 per cent. Although increasing the curing time can compensate for the loss of intensity caused by wand tipping, at large angles the large increase in time required would not be clinically practical. The authors recommend that the light be positioned so that the beam impacts on the restoration surface as close to the perpendicular as possible. A high risk of incomplete curing is likely when the beam is tipped more than 30 degrees from the perpendicular. If the clinician has any doubts about his or her ability to achieve a satisfactory level of curing light intensity, an autocuring material should be used.

The curing effectiveness of the light unit and the curability of the composite must be determined on a routine basis, since, with time, the light source can lose intensity, the wand itself can become damaged, and the composite can change characteristics with age. In addition, different brands and different shades will have different curing characteristics and these need to be determined for each material. A simple way to do this is to fill a short, 6.0-mm long piece of drinking straw with some of the uncured composite, and cure it, from one end only, for the recommended time. It is important to keep the light perpendicular and as close as possible to the resin surface. After curing, remove the straw and the unset resin, and measure the length of the solid resin cylinder. Since the degree of cure will vary from a maximum at the light-facing surface to no cure at the bottom of the cylinder, adequate curing for clinical function will have been achieved for only a fraction of the measured length. To account for this, the clinician should assume that the acceptable depth of cure is only one-half¹⁶ that of the measured length.

Commercially-available testing wells are also available (Hardness Testing Disks, Demetron Research Corp, Dansbury, Conn.). The resin is placed in one of the disc's wells and cured. Afterwards, the hard-

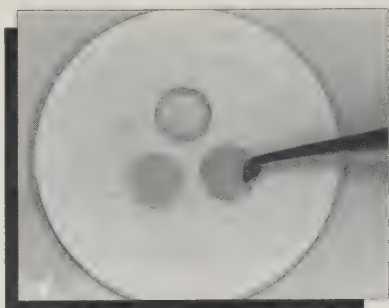


Fig. 4: Device for determining the degree of cure of a dental composite. The resin is cured in one of the wells in the composite resin disc, and its surface hardness is compared to that of the discs by carving with a sharp instrument.

ness of the top and bottom surface of the cured resin cylinder is compared to that of the disc, which is made from a composite known to be properly cured (**Fig 4**). Assuming that the clinician will never place an increment of resin that is thicker than the well's depth, this test is a simple method of determining whether the composite is adequately cured.

Since these methods are not only a test of the light unit but also of the curability of the composite, they allow the clinician to easily determine whether the restorations are properly cured. However, should the clinician discover that the composite is not properly cured, further tests will have to be done to determine whether it is the light unit or the composite that is defective.

During curing, the heat generated by the light and setting reaction can cause appreciable heating of the composite. Temperature increases in excess of 16°C have been recorded for small (2.0 mm thick) restorations cured for 60 seconds. Since, in animal studies, pulpal temperature increases of just 5°C caused pulpal necrosis,¹⁹ adequate bases must be used in deep cavities to assure adequate thermal protection. Suitable pulp protection should always be used, since the monomer and other constituents can cause pulpal irritation in deep cavities.

Great care must be taken to create a defect-free surface. Surface porosity created during finishing as well as surface microcracks cre-

ated by polymerization shrinkage and finishing procedures, greatly increase the wear rate²⁰ and surface staining. Although older finishing systems such as diamond stones and multifluted finishing burs impart a smooth surface as seen by the unaided eye, microscopically, the surface created by these instruments is very rough (**Figs. 5A, 5B**). Newer systems that use submicron-size abrasive particles are preferred, as they create a much superior surface (**Fig. 5C**).

Since a substantial improvement in properties occurs as a result of postcuring,¹⁴ finishing procedures should be delayed for at least 10 minutes and preferably 20 minutes to assure maximum resin polymerization. During finishing, avoid excessive pressure and heat build up, as this will increase the incidence of surface damage. A surface-sealing resin – intended for use immediately following restoration finishing – that fills in surface defects was evaluated recently²⁰ and found to reduce the wear rate of the single brand of composite tested by one-half.

Although not discussed in this article, good bonding is an integral part of creating a successful restoration.

Summary

Evaluate and adjust the occlusion, if necessary and possible. Carefully assess the patient's expected caries susceptibility. Select an alternative material if your assessment indicates that the clinical demands cannot be met by a composite. Avoid composites containing coarse particle and strontium glass fillers. Select composites with the heaviest-loading and most densely-packed filler possible. Use heavily-loaded micro-filled composites (inorganic filler size about 0.04 μm) in areas such as the non-incisal regions of the anterior, where maximum esthetics and finishability are required and the occlusal stresses are low. In all other applications, use hybrid or fine particle composites with the highest possible filler loading and a maximum particle size of 5.0 μm . Review the literature, including ADA's lists of certified and accept-

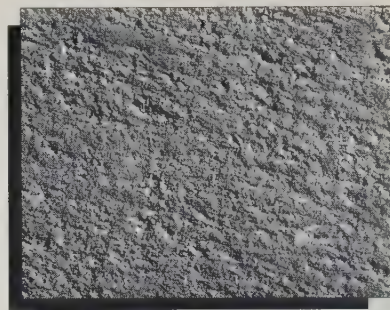


Fig. 5(a):



Fig. 5(b):



Fig. 5(c): Surface finish on a composite restoration created by: a) twenty-four flute carbide bur; b) 10 micron grit diamond instrument; c) micro-polishing system. (Original magnification 500X.)

able composites. If you decide on an ADA-approved material, make sure the product's package is stamped with the appropriate ADA seal.

Make sure that the composites have not exceeded their shelf life, and that they are at room temperature before use. When using light curing resin, ensure that adequate exposure time (minimum of 40 seconds) is used and that the wand tip is clean. Both acetone and chloroform are strong resin solvents and may be used to assist in the removal of set resin. As these liquids are both highly flammable and possess some biohazard properties, exercise care when using them. A dry field is essential, as water contamination will destroy

esthetics and properties.

Use several small increments of composite, rather than a few large ones, and make sure that the resin to be cured is never more than a few millimetres thick. When using darker or more opaque shades, increase the exposure time and decrease the thickness of the increments. Use a light unit that provides a high light intensity (at least 550 lux at 470 nm), and does not allow the light beam to spread out significantly. During curing, keep the tip of the wand as close to the restoration surface as possible, and direct the light perpendicular to the restoration surface.

Be alert to the potential of thermal and chemical damage to the pulp, which may result from excessively long light-curing times, inadequate cavity bases and inadequate pulp protection. Delay finishing and polishing procedures for at least 10 minutes after light curing, and use finishing systems and techniques that: reduce heat build up, impart maximum surface smoothness and reduce surface defects such as porosity and microcracks.

Periodically test the level of curing of the composite used in your office to detect defective light units or composite material, and to determine the curing characteristics of the composites being used. If there is any risk that a satisfactory level of curing light intensity will not be achieved, an autocuring material should be used. To avoid problems with partial setting caused by the ambient room light, use the material within 90 seconds after it has been dispensed, and try not to direct the operating light onto it prior to curing.

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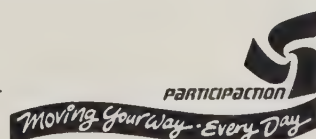
References

1. Jones, D.W. Composite restorative materials. *J Can Dent Assoc* 56(9):851-56, 1990.
2. Leinfelder, K.F. Posterior resins. *J Can Dent Assoc* 55(1):34-39, 1989.
3. Jordan, R. and Suzuki, M. The ideal composite material. *J Can Dent Assoc* 58(6):484-87, 1992.
4. Phillips, R.W. *Skinner's Science of Dental Materials*. 9th ed. WB Saunders Co., Toronto, Ont., Chapters 12, 17, 1991.
5. O'Brien, W.J. *Dental Materials: Properties and Selection*. Quintessence Publishing Co., Inc. Chicago, Ill., Chapters 6, 7, 1989.
6. Craig, R.G., Ed. *Restorative Dental Materials*. CV Mosby Co. Toronto, Ont. 1989.
7. Mitchem, J.C. and Gronas, D.G. The continued evaluation of the wear of restorative resins. *JADA* 111:961-64, 1985.
8. Roulet, J.F. The problems associated with substituting composite resins for amalgam: a status report on posterior composites. *J Dent* 16:101-13, 1988.
9. Mjor, I.A., Jokstad, A. and Qvist, V. Longevity of posterior restorations. *Int Dent J* 40:11-17, 1990.
10. Norman, R.D., Wright, J.S., Rydberg, R.J. et al. A 5 year study comparing a posterior composite resin and an amalgam. *J Prosthet Dent* 64:523-9, 1990.
11. Barnes, D.M., Blank, L.W., Thompson, V.P. et al. A 5 and 8 year clinical evaluation of a posterior composite resin. *Quint Int* 22:143-51, 1991.
12. McKinney, J.E. and Wu, W. Chemical softening and wear of dental composites. *J Dent Res* 64:1326-31, 1985.
13. Soderholm, K.J., Zigan, M., Ragan, M. et al. Hydrolytic degradation of dental composites. *J Dent Res* 63:1248-54, 1984.
14. ADEPT Institute. Direct composite restoratives. *ADEPT Report* 2:53-64, 1991.
15. Pagniano, R.P., Longenecker, S. and Chandler, H. Effect of unit and operator lights on the consistency of light activated composites. *J Prosthet Dent* 61:150-52, 1989.
16. McCabe, J.F., Carrick, T.E. Output from visible light activation units and depth of cure of light activated composites. *J Dent Res* 68:1534-39, 1989.
17. Baharav, H., Abraham, D., Cardash, H.S. et al. The effect of exposure on the depth of polymerization of a visible light-cured composite resin. *J Oral Rehab* 15:167-72, 1988.
18. Prevost, A.P., Desautels, P., Benoit, C.A. et al. Polymerization ability of 15 light curing generators. *J Can Dent Assoc* 51(3):221-225, 1985.
19. Zack, L. and Cohen, G. Pulp response to externally applied heat. *Oral Surg, Oral Med, Oral Pathol* 19:513-30, 1965.
20. Dickinson, G.L., Leinfelder, K.F., Mazer, R.B. et al. Effect of surface penetrating sealant on wear rate of posterior composite resins. *JADA* 121:251-55, 1990.

Just having
a ball....

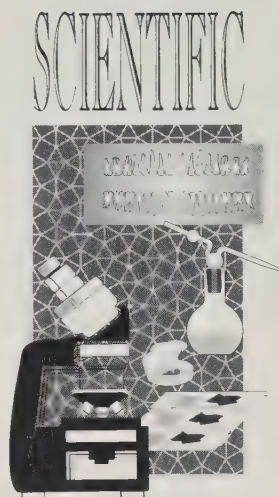


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Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba

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ABSTRACT

The caries rates of six-year-old Manitoba children from a non-fluoridated Northern community were compared with those of a representative group of southern Manitoba children from non-fluoridated areas. All of the surveyed children became eligible for dental treatment coverage under Manitoba Health's Children's Dental Program approximately two months prior to the survey. Access to dental care was equivalent for all children.

Screening (data collection) was completed by Manitoba Dental Health staff and was based on standard World Health Organization (WHO) criteria.

The initial assessment of the data indicated that the Northern Manitoba children experienced an average of 82 per cent more decay per child than the southern group. Caries treatment requirements in the north were 59 per cent greater than in the south. The southern Manitoba children were almost twice as likely to be caries free than the Northern children.

Closer examination of the Northern data, based on a socio-economic delineation, indicated that the Northern middle- to high-income group experienced 24 per cent more decay per child than the southern group. The Northern mid-

dle- to low-income group experienced 124 per cent more decay per child than the southern group.

In this study, it was demonstrated that although increased dental caries experience was closely related to geographic location, socioeconomic factors may play an even greater role in dental caries experience.

SOMMAIRE

Au Manitoba, on a comparé les taux de caries chez les enfants de six ans d'une localité septentrionale dont les eaux ne sont pas fluorurées à ceux d'un groupe représentatif d'enfants qui, dans la partie méridionale de la province, ne consomment pas eux aussi d'eau fluorurée. Environ deux mois avant l'étude, tous les enfants y participant ont eu droit à des soins dentaires en vertu du programme-santé provincial à l'intention des enfants. Tous ont donc reçu les mêmes soins.

Les données ont été recueillies par le Service de santé dentaire du Manitoba en fonction des normes de l'Organisation mondiale de la santé.

La première analyse des données a révélé que les enfants de la localité du Nord accusaient en moyenne 82 p. cent plus de caries que ceux de la région sud. Aussi les premiers ont-ils eu besoin de

plus de soins (59 p. cent de plus) que les seconds. Et presque deux fois plus d'enfants du Sud que ceux du Nord n'avaient aucune carie.

Par ailleurs, une analyse plus poussée des données recueillies et faite en fonction de facteurs socio-économiques a révélé que, dans le groupe des enfants provenant de familles à revenus moyens et élevés, ceux du Nord accusaient un taux de caries supérieur de 24 p. cent par rapport à ceux du Sud. Et dans le groupe des enfants provenant de familles à revenus faibles et moyens, ce taux s'élevait à 124 p. cent.

Cette étude démontre donc que, si l'incidence des caries est liée étroitement à des facteurs géographiques, elle l'est encore plus à des facteurs d'ordre socio-économique.

Background

A school-based dental screening was carried out in the Northern Manitoba city of Thompson during the latter part of October 1990 to determine the dental health status of area children. A representative southern sample group was chosen for comparison purposes.

Thompson is situated approximately 750 km north of Winnipeg, and has a population of 15,000

people. The city's economy is based on one of the world's largest nickel mining and processing operations, which ships over 100-million pounds of nickel to world markets every year. Other economic activities in Thompson include tourism, government, service industries and transportation distribution companies.

In 1990, Thompson had six full-time dentists. Specialized pedodontic, oral surgical and orthodontic services were provided on a regular basis from Winnipeg. A large percentage of the population receives third-party coverage for dental care through their employment. Thompson's water supply is non-fluoridated.

The southern sample group was comprised of children from several communities, all located within a 100 km radius south of Winnipeg. Approximately 96 per cent of Manitobans are linked to public water supplies and already drink fluoridated water. It was therefore difficult to isolate an equivalent centre to Thompson. Southern rural locations were chosen that were known to have a natural fluoride level of less than 0.70 parts per million (ppm), based on information provided by Manitoba Environment. The combined population of the area is estimated to be 16,300.

In 1990, six centres within or adjacent to the southern survey area had dental offices, with approximately 14 dentists. In addition, the southern area had easy access to general practice and specialist dental offices in Winnipeg.

Context of Present Study

The Federation Dentaire Internationale (FDI)/World Health Organization (WHO) has set a goal of having 50 per cent of the world's six-year-old child population caries free by the year 2,000.¹ Currently, industrialized countries have caries-free rates of 10-50 per cent in this age group. With caries rates declining throughout the world, there is still variance from region to region.^{2,3}

In several surveys of dental caries in American and Canadian children, caries rates were generally

TABLE I

Mean Number of Decayed, Extracted and Filled Teeth Per Six-year-old Child in a Northern and Southern Manitoba Sample

	Northern	Southern	Significance
Decayed:			
deciduous	2.01	1.23	***
permanent	.29	.22	NS
Extracted:			
deciduous	.32	.05	***
permanent	0	0	NS
Filled:			
deciduous	1.61	.82	***
permanent	.01	.01	NS
Total treatment received	1.94	.88	***
Total caries treatment requirements	2.31	1.45	***
Total df/DMFT	4.25	2.34	***

*** P < 0.001

NS – Not significant

shown to be higher in Northern areas.⁴⁻⁷ Recent reports from a number of Canadian provinces show that the caries rates of Northern native children are more than double those of children residing in southern areas.⁸⁻¹⁰

Purposes of Study

The study had two distinct purposes: To document the prevalence and severity of dental decay in a Northern Manitoba community, and to compare the dental health status of a selected age group in this community with that of a similar age group in southern Manitoba. Gingival/periodontal status was not considered in this study.

Methods

Using standard WHO methods,¹¹ all six-year-old children were examined with mouth mirrors and explorers, using either portable or fixed dental equipment. Three Manitoba Health dentists and one dental nurse/therapist conducted the examinations.

Manitoba Dental Health dentists are calibrated every two years by staff members of the University of

Manitoba's faculty of dentistry. The dental nurse/therapist was calibrated by one of the Manitoba Health dentists.

Sampling

The six-year-old children in Northern and southern Manitoba were, respectively, eligible for care under the private office fee-for-service and the school-based dental nurse/therapist delivery modes of the Manitoba Children's Dental Program for approximately two months. All 270 six-year-olds residing in Northern Manitoba as well as 249 six-year-olds in southern Manitoba were examined.

Data Analysis

Data were entered on computer using Lotus 1-2-3. The accuracy of data recording and inputting was verified using manual reliability spot checks. The statistical analysis of the data was implemented using Number Cruncher Statistical Systems (NCSS).¹² The results reported by the four examiners were compared using the Kruskal-Wallis test.¹³ No evidence of any examiner bias was found.

TABLE II
Mean Number of Decayed, Extracted and Filled Teeth Per Child in Low- to Middle-Income Northern (N1), Middle- to High-Income Northern (Nh) and Southern (S) Manitoba Samples

	N1	Nh	S	N1 v Nh	N1 v S	Nh v S
Decayed:						
deciduous	2.52	1.34	1.23	**	***	NS
permanent	.38	.17	.22	NS	NS	NS
Extracted						
deciduous	.49	.09	.05	**	***	NS
permanent	0.0	0.0	0.0	NS	NS	NS
Filled:						
deciduous	1.84	1.30	.82	NS	***	*
permanent	.03	0.0	.01	NS	NS	NS
Total treatment received	2.33	1.39	.88	*	***	*
Total CTR	2.90	1.51	1.45	***	***	NS
Total deft/DMFT	5.23	2.90	2.33	***	***	*

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

NS – Not significant

Potential regional differences in qualitative characteristics such as gender and the presence or absence of caries were tested using the Chi square test and, where present, expressed as relative risks. Potential regional differences in quantitative characteristics, such as the number of decayed teeth per child, were tested using the Mann-Whitney U test. A non-parametric, rather than parametric, statistical approach was chosen because of the non-normal nature of the measurements.¹³

Findings

An examination of the gender composition of the Northern (50.4 per cent female) and southern (57.8 per cent female) samples confirmed that no significant differences existed between these groups (Chi square = 2.90 with 1 df, N.S.). There was, therefore, no reason to suspect gender bias in any subsequent Northern/southern comparison.

In the Northern sample, 73 of the 270 children examined (27.0 per cent) had no detectable caries, while in the southern sample, 121 of the 249 children (48.6 per cent) were caries free on examination. These figures were very highly sig-

nificantly different (Chi square = 25.72 with 1 df, $p < 0.001$).

A comparison of the mean number of decayed, extracted and filled teeth per child in the Northern and southern Manitoba samples is presented in **Table I**. Very highly significant differences in the mean numbers of decayed, extracted and filled deciduous teeth existed between the Northern and southern samples with, in all cases, the values being substantially higher in the Northern sample.

There were no significant differences between the two groups in terms of the mean numbers of decayed, extracted and filled permanent teeth. These results may be interpreted as a reflection of the limited numbers of permanent teeth present in six-year-old children, and the short time frame for decay to occur, rather than as inter-group equality.

A total of 623 (544 deciduous, 79 permanent) decayed teeth were identified in 270 six-year-old children in Northern Manitoba, an average of 2.31 decayed teeth per child. Of these decayed teeth, 30 required extraction due to extensive caries and/or abscesses.

In the southern area, there was a total of 361 (306 deciduous, 55

permanent) decayed teeth in 249 six-year-olds, an average of 1.45 decayed teeth per child. Of these decayed teeth, 22 required extraction due to extensive caries and/or abscesses.

An average of 0.32 deciduous teeth per child had been extracted in the North compared with an average of 0.05 per child in the south. By examining the caries treatment requirements (CTR) for children in both areas, after removing the caries-free children, it can be seen that the mean CTRs were 3.16 versus 2.84 (2.31/0.73 versus 1.45/0.51), respectively, which was not significantly different. This indicates that differences in **Table I** may hinge more on the caries-free difference rather than on the differences for those who developed decay.

Of the deft/DMFT teeth identified, 524 (46 per cent) had received treatment in the North and 221 (38 per cent) had received treatment in the south. It was evident that the major part of dental disease was not yet treated in both areas. Of the restored deciduous teeth, it is interesting to note that 176 (41 per cent) in the North and 50 (24 per cent) in the south were treated with stainless steel crowns.

As might be expected, very few sealants had been placed on either group of children. In the North, 14 sealants had been placed on first permanent molars, while in the south two first permanent molars had been sealed.

All three summary measures (caries treatment received, CTR and deft/DMFT) were significantly different, with the Northern sample consistently yielding much higher levels. The Northern Manitoba mean caries treatment received to date, mean caries treatment requirements and mean deft/DMFT were, respectively, 120 per cent, 59 per cent and 82 per cent higher than the corresponding southern Manitoba values. However, when the Thompson data were broken down by school, a very different picture became apparent. **Table II** shows the data reported in **Table I** broken down by socioeconomic status, based on information provided by the Mystery Lake School District and Census Canada.¹⁴

These Northern groupings were graded as middle to low (N1) and middle to high (Nh) socioeconomic status. There were three schools in each grouping, and the location of the schools appeared to play a key role in determining the grouping.

The southern sample was not broken down in this manner, as information obtained from southern school divisions and Census Canada indicated that the vast majority of children were of middle socioeconomic status, and that delineation of individual schools as being of predominantly low to middle or middle to high socioeconomic status was not possible. It was felt, therefore, that a split of the southern data into two socioeconomic regions would be inappropriate and impractical. It was also felt that the intermediate nature of the southern socioeconomic status and the non-fluoridated nature of the southern catchment area offered the basis for a meaningful north/south comparison.

A comparison of the gender composition of the Northern low- to middle-income group (46.2 per cent female) and the Northern middle- to high-income group (56.1 per cent female) confirmed that the difference was not significant (Chi square = 2.63 with 1 df, N.S.). The possibility of gender bias in group comparisons can therefore be discounted.

In the Northern low- to middle-income sample, 33 of the 156 children (21.2 per cent) were caries free on examination, compared to 40 of the 114 children (35.1 per cent) in the Northern middle- to upper-income sample. These values were significantly different (Chi square = 6.48 with 1 df, $p < .01$).

The southern group had a caries-free rate of 48.6 per cent (121 out of 249 children). This was significantly higher than either of the Northern groups (Chi square = 30.65 with 1 df, $p < .001$, when compared with the Northern low- to middle-income group; Chi square = 5.78 with 1 df, $p < .02$, when compared with the Northern middle- to high-income group).

In terms of the likelihood of being caries free, the Northern mid-

dle- to high-income sample occupies a position that is mid way between that of the southern and Northern low- to middle-income samples and significantly different from both of them.

Highly significant differences were evident between the two Northern samples in terms of the mean number of deciduous teeth extracted per child, the caries treatment received to date, the mean number of decayed deciduous teeth per child, the caries treatment requirement per child and the deft/DMFT per child. In all cases, the Northern low- to middle-income group exhibited levels substantially higher than those found in the Northern middle- to high-income group. The caries treatment received to date was 68 per cent higher, the caries treatment requirement was 92 per cent higher and the deft/DMFT 80 per cent higher.

The Northern low- to middle-income caries treatment received, caries treatment required and total deft/DMFT levels were 165 per cent, 100 per cent and 124 per cent higher, respectively, than the corresponding southern Manitoba levels.

By contrast, the Northern Manitoba middle- to upper-income group showed very few differences to the southern Manitoba sample. The mean number of primary teeth restored per child was significantly higher in the Northern middle- to upper-income group. (On this measure, the Northern middle- to upper-income mean of 1.30 was almost exactly equidistant between the Northern low- to middle-income mean of 1.84 and the southern mean of 0.82.) As a result, the caries treatment received to date and the total deft/DMFT levels were significantly higher in the Northern middle- to high-income group when compared to levels in the southern group. No other differences were evident.

The mean number of decayed teeth and the total caries treatment requirements were virtually identical in the Northern middle- to upper-income and southern samples.

On all the major measures of dental health status, therefore, the

Northern low- to middle-income group was much worse off than either its Northern middle- to upper-income or southern counterparts. The Northern middle- to upper-income and southern groups were effectively identical in terms of their caries treatment requirements and showed only a moderate difference in terms of the treatment received to date.

It can be seen from **Table II** that there were five times as many teeth lost prematurely by the N1 group than were lost by the Nh group. Restored teeth averaged 1.86 teeth per child in the N1 group and 1.30 per child in the Nh group. Again, it was interesting to note that of restored primary teeth, 121 (42 per cent) in the N1 group and 55 (37 per cent) in the Nh group were stainless steel crowns. There were 33 (21 per cent) caries-free children in the N1 group as compared to 40 (35 per cent) caries-free children in the Nh group.

The mean deft, DMFT index was 5.24 for the N1 group and 2.89 for the Nh group. The caries treatment requirements for both groups showed an average CTR of 2.90 for the N1 group and 1.51 for the Nh group. Thus, the middle- to low-income children had 93 per cent more caries treatment requirements than children in the middle- to high-income group. The Nh group's 1.51 CTR was very similar to the 1.45 CTR of the southern Manitoba sample.

Discussion

The initial conclusions that can be drawn from this survey are that in two non-fluoridated areas, there is double the caries treatment requirement between a Northern and southern community. However, on socioeconomic stratification, it becomes clear that almost half the children in the Northern community have a CTR equivalent to that of the southern group. Decay rates are doubled in children of lower socioeconomic background.

As the staff of Manitoba Health were not from the Thompson area, it was unclear to them, initially, which schools fell into which socioeconomic categories. Examiner bias was, therefore, not an influ-

encing factor in this blind study. Unfortunately, the schools with higher decay rates also appeared to be the schools with larger numbers of native children. This finding is consistent with other studies,⁹ but again may be linked to socioeconomic rather than geographic reasons.

The fact that Winnipeg has received a fluoridated water supply must also have an effect on communities to its south east. How great this effect would be is hard to determine, as manufactured produce would also be imported into the Thompson area.

The high percentage of stainless steel crowns on the Northern children can be partly attributed to a high number of crowns in specific high-risk children. These were provided in many instances by dentists or pedodontists, under general anesthesia.

Although the CTR of the southern group is the lowest of the three groups, it is still higher than one would like. The outstanding untreated decay in the southern group may be partly attributable to parents delaying dental care until their children became eligible for care under the Children's Dental Program.

The part insurance coverage has played on the three high CTR Northern schools is interesting. Many of these children had double and triple coverage: They were covered by the provincial government due to their age, by the federal government due to their treaty status and in some instances by a private third-party coverage, as one of their parents worked at the nickel mine.

Conclusions

The following conclusions can be derived from this study:

- 1) The deft/DMFT of six-year-old children in a Northern Manitoba community is double that found in a representative southern Manitoba sample.
- 2) The caries treatment requirements of children in the middle- to high-socioeconomic group in Northern Manitoba is similar to the

CTR of children in southern Manitoba.

3) The CTR of children in the low- to middle-socioeconomic group is double that of children in the middle to high group in Northern Manitoba.

4) Dental insurance coverage appears to play a limited role in whether or not low- to middle-socioeconomic group children obtain dental care.

Dr. Cooney is the Regional Dental Officer, Manitoba Region, for Health and Welfare Canada.

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References

1. Federation Dentaire International. Global goals for oral health in the year 2000. *Int Dent J* 32:74-77, 1982.
2. Pilot, T. Trends in oral health: A global perspective. *New Zeal Dent J* 84:40-45, 1988.
3. Johnston, D.W., Grainger, R.M. and Ryan, R.K. The decline of dental caries in Ontario school children. *J Can Dent Assoc*, 1986.
4. Oral Health of United States Children. The National Survey of Dental Caries in U.S. School Children. U.S. Department of Health and Human Services, 1986-1987.
5. Brunelle, J.A. and Carlos, J.P. Recent trends in dental caries in U.S. children and the effect of water fluoridation. *J Dent Res* 69:(Spec. Issue) 723-727, discussion 820-823, 1990.
6. Leake, J.L., Cageorge, S.M. and Ryding, W.H. Dental health status survey of Manitoba children. *J Can Dent Assoc*, 1980.
7. Trodden, B.J. School of Dental Hygiene. University of Manitoba. Swampy Cree Tribal Council Dental Survey: Final Report, Winnipeg, 1990.
8. Leake, J.L. University of Toronto. Report on the Oral Health Survey of Canada's Aboriginal Children Aged 6 and 12, 1990-1991.
9. British Columbia Children's Dental

Health Survey. Province of British Columbia, Ministry of Health, 1980.

10. Health & Welfare Canada, Pacific Regional Medical Services Branch. Dental Health Survey of British Columbia Native Children, Ottawa, 1984.

11. World Health Organization. Oral Health Surveys. Basic Methods, 3rd ed. 1987.

12. Hintze, J.L. Version 5.03 Reference Manual, NCSS, Kaysville, Utah, 1990.

13. Hassard, T.H. *Understanding Biostatistics*. St. Louis, Mosby, 1991, pp. 263-277.

14. Statistics Canada. Census Canada, Manitoba, 1986.



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Dr. Alan A. Lowe, Professor and Head
Department of Clinical Dental Sciences
Faculty of Dentistry
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The position is available August 1, 1993; however the search will remain open until the position is filled by a qualified candidate. Salary and academic rank commensurate with background and experience. Letter of interest and CV should be sent to: **Dr. Mel L. Kantor, UMDNJ-New Jersey Dental School (JDE), 110 Bergen Street, Room C-827, Newark, New Jersey 07103-2400.** UMDNJ, New Jersey's university of the health sciences, is an Affirmative Action/Equal Employment Opportunity Employer, m/f/h/v, and a member of the University Health System of New Jersey.



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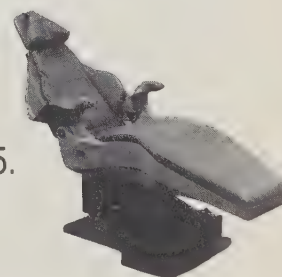
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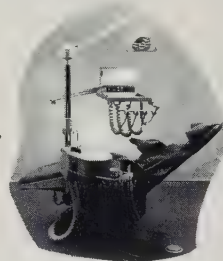
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Meetings & Announcements

THE 17TH ANNUAL FLORIDA MEDICAL, DENTAL, LEGAL AND PODIATRIC SEMINAR

Place - Embassy Suites Hotel
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Dates - Dec. 19, 1993 - Jan. 2, 1994

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82ND WORLD DENTAL CONGRESS • VANCOUVER OCTOBER 2ND TO 8TH, 1994

U P D A T E • U P D A T E • U P D A T E • U P D A T E • U P D A T E

In 1994 we are switching to the Fall and we will be International!



For those of you who were present at the 1993 Canadian Dental Association's annual meeting, and for those of you who have missed Canada's largest dental meeting ever, the following are the final attendance figures ...

Dentists	3443
Dental Assistants	1770
Dental Hygienists	873
Dental Technicians	37
Exhibitors	1400
Accompanying Persons / Spouses / Guests / Children / General / Staff	1487
Grand Total	9010

Thank you Toronto!

The 1994 Convention activities of the Canadian Dental Association are now focused on the 82nd FDI World Dental Congress. For the past 18 months, the 1994 Committee members and CDA staff have been working intensively to develop a variety of programs for this international meeting, which will be an exciting opportunity for the Canadian dental community.

The 82nd Annual World Dental Congress of the Fédération Dentaire Internationale will be held in Vancouver, Canada, at the Vancouver Trade and Convention Centre, from October 2nd to 8th, 1994, under the theme "World Focus on Oral Health". This prestigious event hosted by the Canadian Dental Association, is expected to attract over 10,000 dental professionals, including more than 5,000 dentists from all over the world.

A dynamic scientific program is being designed to meet the needs of dentists, dental hygienists, dental assistants, dental technicians and office personnel. Presentations on the most current topics affecting the dental professional in the 1990's will be given by a host of internationally renowned speakers. During the course of the program, great emphasis will be given to hands-on courses and live television presentations which will give participants an opportunity to concentrate on specific areas of interest to them.

The international dental industry will also convene in Vancouver. A trade exhibition, the largest ever held in Canada, will be open from October 4th to 7th and will be housed at the Vancouver Trade and Convention Centre.

In addition to numerous pre- and post-congress tours, which will take visitors on a voyage of discovery through Canada's unspoiled regions, an elaborate spouse's and children's program will also be available for delegates travelling with their families.

You will be kept up to date on the development of this Congress through the *CDA Journal* pages and direct mailings. **Please block the dates in your agendas, October 2nd - 8th, 1994.** As the host Association, we look forward to a massive Canadian participation at the Congress. However, space will be limited, and we would therefore urge you to register early. In doing so, our staff will have all the necessary time to give you "first-class" service and answer all the questions you may have. Please, therefore, plan your attendance today.

FDI '94 promises to be the largest Dental Congress ever to be held in Canada, and will undoubtedly break the records that have just been set by the 1993 CDA Toronto Meeting! I look forward to enjoying it with you.

Dr. Michel Jahjah
General Chairman
1994 FDI Organizing Committee
1815 Alta Vista Drive
Ottawa, Ontario, Canada
K1G 3Y6

Tel.: 1-613-523-1770
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Convention Lecture Tapes • Enregistrement des conférences

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Göteborg • August 29 – September 2, 1993

Attend the 1993 FDI World Dental Congress in Göteborg, Sweden with CDA Conventions and Participate in the Official 1993 FDI Tour Program



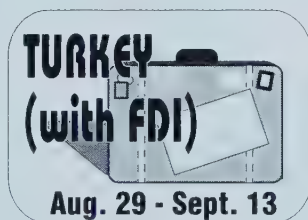
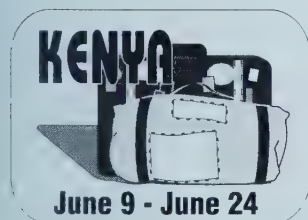
Göteborg – beautiful and charming harbour city in a breathtaking archipelago.

CDA Conventions is offering CDA Members a special package deal to the 1993 FDI World Dental Congress being held in Göteborg, Sweden. The itinerary combines a trip to the 81st World Dental Congress with a unique out-of-country seminar program in the fascinating country of Turkey.

Travellers will depart from Toronto on Sunday, August 29th and arrive in Göteborg on Monday, August 30th. Departure from Göteborg to begin your odyssey to Turkey will take place on Friday, September 3 via London, England. The itinerary includes stops in Istanbul, Ankara, Cappadocia, Pamukklae, Denizli, Khushadasi and Izmir. For more details on the 1993 FDI World Dental Congress and the travel itinerary contact CDA Conventions at 1-800-267-6354.

Travel The World With Us!

CDA Conventions' 1993 Out-of Country Seminar Program



This year CDA Conventions has organized four unique out-of-country seminar programs for its members. All members will soon receive a brochure with details of these programs. If you haven't received yours, call CDA Conventions toll free at 1-800-267-6354 or fax your request to (613) 523-3062.

If you like to learn while you travel (or travel while you learn), these programs are organized in cooperation with the dental associations of the destination countries. Don't miss them! Book now to ensure your choice of programs as space is limited.

INSTRUCTIONS FOR CONTRIBUTORS

The *Journal* of the Canadian Dental Association welcomes the submission of previously unpublished articles, critical reviews of material on advances in dentistry, and clinical reports for consideration for publication. Material is accepted for publication on the understanding that it is submitted solely to the *Journal* and that it has not previously been submitted elsewhere.

Scientific Articles:

Are contributions dealing with research, diagnosis and treatment of dental disease, studies in education, clinical and laboratory research, and other detailed investigations pertinent to dentistry and related fields. The text should not exceed 2,500 to 3,000 words.

Clinical Reports:

Are brief (up to 2,000 words) reports, case histories and clinical observations. References should be limited and a minimum number of illustrations used.

Opinions:

That are fully documented (800 words or less) will be reviewed for publication at the discretion of the editor.

Manuscript Requirements:

Submit three (3) copies (original and two (2) duplicates) to the Editor, *Journal of the Canadian Dental Association*, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All graphs, photographs, charts and tables must also be submitted in triplicate. Authors are asked to submit their articles on computer disks, if possible, stored in Word Perfect, Word Star or ASKE. (IBM compatible programs, i.e. DOS-based, are definitely preferred.) Hard copy, in triplicate, must still be provided for articles submitted on disk. For more details, please contact the editorial staff.

A covering letter designating one author as the correspondent, with his or her full address, telephone number and fax number (if available), must accompany the article. All scientific articles are subject to review by selected consultant referees. Acceptance or rejection of an article for publication is based on the referees' reports plus editorial consideration.

The editor reserves the right to edit manuscripts for stylistic consistency, clarity and conciseness. The author named as correspondent will receive a copy of the edited manuscript for checking prior to publication. If the author does not respond promptly,

within the time allotted, his or her acceptance of the final article will be assumed. No exceptions will be made.

Manuscript Format:

All material (title, abstract, text, references, tables and legends) should be typed, double-spaced, on one side of 8 1/2" x 11" pages, with margins of at least one inch on all four sides.

Article Titles:

Should be descriptive but concise and suitable for indexing. Lengthy titles will be subject to editing.

Abstract:

Stating the purpose, results and conclusion of the work must accompany all manuscripts. All abstracts will be translated into French (or English, as the case may be). Abstracts should be approximately one typewritten page (250 words in length), maximum.

Authors Affiliations:

The authors' names, degrees, and university affiliations must be provided. Authors are responsible to disclose to the Editor any financial interests they may have in products mentioned in their article.

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Should be selective. They must be keyed to the text and numbered consecutively. *Journal* references must give the author's name, article title, abbreviated journal name, volume number, first and last page numbers of article and year of publication, i.e., 1. Hechter, F.J., Symmetry and dental arch form of orthodontically treated patients. *JCDA* 44:173-184, 1978.

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On the back of each print or slide, the figure number and the top edge should be indicated lightly using a grease pencil. Each set of photographs and slides should be placed in a separate envelope and marked with the

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Most articles are published at no cost to the author, but a fee could be levied if extensive illustrative, formula, tabular or photographic matter is used.

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